American Journal of Obstetrics and Gynecology

Vol. XXI St. Louis, June, 1931 No. 6

THE WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION

FOREWORD

THE editors and publishers of the American Journal of Obstetrics and Gynecology have the honor to present to their readers in this issue the reports of various committees and individuals which deal with the obstetric topics presented for consideration and discussion at the White House Conference recently held in Washington, D. C. Eventually the entire proceedings of this meeting will be published in book form. Many volumes will be required to present adequately the extended transactions but when completed this will be of incalculable benefit as a work of reference, for many and varied fields of activity and research will be covered. Because of lack of space we are able here to present merely the outstanding reports of the Committee Chairman and certain subsidiary contributions which are of particular interest to the teacher and practitioner of obstetrics. To the authors of these we desire to extend our appreciation and thanks for their help and cooperation.

The first White House Conference was called by President Roosevelt in 1909 and concerned itself chiefly with the problems of the dependent child. Due to the stimulus of this meeting the Children's Bureau of the Department of Labor was organized in 1912. The second conference was called in 1919 by President Wilson, met at Washington, and was followed by eight important regional conferences. The discussions of the social and economic status of the child were supplemented by consideration of its health and that of its mother. Quite naturally obstetrics as such acquired an important place in these deliberations and in the third and most recent White House Conference which was called by President Hoover to meet in Washington in 1930, "medical service" occupied the attention of one of the constituent and principal sections to which the activities of the conference were devoted. Months of preliminary study, research and assembling of facts by many experts in their respective fields were presented by over 15 main committees at the last conference, which was held in November in Washington.

It was felt, however, by those in charge of the meeting that more time was needed to complete the work of the Section on Medical Service. For the realization came at the very beginning of the movement that the health of the mother and her ability to bear and care for her children was a basic fact and that it was essential to determine among other things what was necessary to provide a background for safe and successful motherhood.

Dr. Samuel McC. Hamill has acted as the Chairman of the Committee on Medical Service and is to be commended for the noteworthy manner in which he developed and coordinated the labors and the varied researches so capably done by his associates. The individual committees were presided over by men and women each prominent in their particular spheres and a careful reading of their reports will afford a demonstration of how thoroughly the work has been done. The field covered in obstetrics has been a particularly broad one, as is evidenced by the catholic character of the subjects which have been investigated. Final conclusions may not be possible, but it is evident that the present survey of conditions in the United States shows the need for a more satisfactory program of obstetric care which shall entail a movement for the improved education of physicians in obstetrics as well as that of the laity and of all associated agencies interested in this branch of medicine.

Were the mere compilation of statistics and the publication of extended reports the only outcome of this conference, much would have been gained, but such publication could have only a limited value. The results of these extended studies must be put into practice and a follow-up committee for the section on Medical Service of the Conference has been authorized and it is hoped will soon begin its activities. The functions of this committee as stated by the General Chairman of the Conference, the Hon. Ray Lyman Wilbur, may be expressed as follows: To get over to the country at large as quickly as possible the importance of applying the knowledge we already possess and for which the machinery exists; to consider all the implications and the reports; to determine definitely whether further studies are required and to stimulate them; to determine the avenues through which the recommendations made by the section can be most effectively put over and to determine the soundness of the methods employed in applying the knowledge we have.

In the development of this important campaign the cooperation of all interested agencies and individuals is essential and a careful coordination of their work must be developed to avoid duplication of effort and the wasteful expenditure of funds, both public and private. The JOURNAL is prepared to assist in these endeavors to the fullest extent and stands ready to cooperate with those who are pledging their time and effort to the accomplishment of the worthy objects of the White House Conference.

THE ADDRESS OF THE CHAIRMAN OF THE COMMITTEE ON PRENATAL AND MATERNAL CARE

By Fred L. Adair, M.D., Chicago, Ill.

THE mother is the life of the family in so far as child health and protection are concerned. We all realize that there is a wastage of maternal lives due to controllable causes operating in connection with childbearing and that our country lags behind the civilized world in the prevention of these deaths. While there may be sources of error in the interpretation of comparative statistics, and the situation in other countries may not be as ideal as it seems, nevertheless those who have opportunity of knowing the situation here, realize that the mortality of both mothers and young infants is unnecessarily high. The loss of the mother in childbirth is a disaster, not only to the newly born infant should it survive, but also to the other children in the family, if there be such. Not only are our maternal, fetal, and neonatal death rates too high, but what is most discouraging there has been little, if any, decrease in the last decade. This becomes of added importance to communities and states in view of acknowledged decline in the birth rate, which means that our human assets are becoming relatively more important. The falling birth rate is affecting particularly the families of our leaders, which is unfortunate and demands the preservation of these infant lives to as great an extent as possible.

Morbidity of the mother and offspring is a very important factor, and we need more information concerning it. Improvement is needed in our certificates for reporting births, stillbirths, infant and maternal deaths. They should be made to satisfy medical, legal, social and statistical requirements. Among the thirteen statements, on the back of the usual birth certificate, which enumerate the advantages of returning these reports, there is no mention of their medical significance, yet physicians sign the bulk of them and the information included in the report is of medical importance. Until the new birth registration blank appeared, which is not yet in general use, the period of gestation was not included in the report, ignoring the fact that many births were reported as living births where the infant was so premature that it had no chance of survival.

In most of the states it is customary to report an infant born dead as a birth on the usual blank and then file an ordinary death certificate, which is so obviously unsuited for reporting such a birth and death as to require no discussion. A single special blank, such as is in use in a few states, for reporting stillbirths is much less cumbersome and can be so drafted as to give the necessary data.

We need much more information relative to maternal deaths than appears on the usual death certificate. In addition to the cause of death we should know the period of gestation, operative procedure if any, place of confinement, and name of the person who attended the mother at childbirth. Among other things this would make it possible to compute accurate maternal and fetal mortality rates according to hospital and home delivery. Many maternity patients dying in hospitals were not delivered there. Some dying at home were delivered in the hospitals. Many deaths after abortion occur in hospitals though usually the abortion itself took place prior to admission. This increases the hospital maternal death rate materially.

Better classification of both maternal, fetal, and early infant deaths, would lead to a better understanding of their causes and ultimately to the working out of more effective means of prevention.

At present we have annually in the Birth Registration Area, approximately 15,000 maternal deaths, 80,000 deaths of infants under one month and 85,600 stillbirths. Three-fourths of the maternal deaths are due to controllable causes—infection, toxemia, and hemorrhage. The fetal and early infant deaths are due to congenital and hereditary conditions, prematurity, birth injuries, and infections, many of which conditions can be controlled. The disabilities resulting to mothers and infants are an unknown quantity, but the beds in hospitals are occupied by many women who require operations for conditions dating from childbirth. The blind, defective and otherwise handicapped children, which number 8,571,000 according to President Hoover, are, in many cases, thus afflicted because of conditions which are inherited, congenital, acquired at birth or immediately subsequent to it. Much of this could be prevented. President Hoover in his address on November 19 at the Conference on Child Health and Protection stressed the fact that there are in this country 14,000 children who are totally and 50,000 who are partially blind. Many of these can trace this condition to syphilis and gonorrhea, which can be practically eliminated as causes of blindness in infants and children by adequate prenatal and postnatal care. There are 300,000 crippled children, many of whom can date their disability to birth. Some of these conditions are congenital and could not be avoided. In others the deformity has resulted from birth injuries which have affected the central or peripheral nervous systems, the muscles, bones or joints. It would not be possible to avoid all of these casualties, but the better the obstetric care the fewer there will be. Appropriate postnatal care would bring many of these conditions to light so that prompt measures could be instituted for their correction. There are 382,000 children with tuberculosis, most of whom have doubtless acquired it within the family circle and many of them from their mothers. The detection of an open tuberculosis in mothers during

the antepartum and postpartum periods would not only safeguard them but also go far in protecting infants from the dangers of acquiring tuberculosis. The loss of the mother has undoubtedly been a contributing factor in the production of the 200,000 delinquent and 500,000 dependent children, and inadequate maternal care comes in for its share of blame as a cause for the 450,000 mentally retarded children and of the 675,000 presenting behavior problems. Nothing was said by President Hoover regarding the number of children afflicted with syphilis, but Stokes, from a wide variety of sources, estimates that the incidence of syphilis in the child population ranges from 3 to 5 per cent.

Many hereditary and congenital factors, as well as birth causes and postnatal conditions, enter into the production of the groups mentioned above. Many of these conditions are caused directly or indirectly by complications arising and affecting mothers during pregnancy and parturition. It is impossible to ascertain how many of the problems presented by these large groups of children could have been prevented by the proper application of the principles of prenatal, intranatal, and postnatal care, but certainly many of them could have been avoided.

The provision of proper nutrition of the infant begins immediately after birth and presupposes a mother who has been properly prepared during pregnancy for nursing her baby and also makes provision for proper postnatal nourishment in case the natural supply is inadequate. Many of these children doubtless suffered from the handicap of prematurity and lack of the special care required for such infants. Many may have suffered from lack of the proper maternal care which may have arisen from a variety of causes.

The means of prevention and control of maternal, fetal and early infant mortality and morbidity are first, the education of the public to expect and demand good and consecutive preconceptional, prenatal, intranatal and postnatal care for mothers and infants. It is useless to create the desire unless there is adequate and efficient personnel to supply the demand. This means the proper education and training of a sufficient number of physicians, dentists, nurses, midwives, social workers and others and that they be properly distributed. It further requires the proper set-up in the form of hospitals, dispensaries, etc., for giving institutional and supplying home care in urban and rural communities to all racial, social and economic groups.

Before undertaking to discuss the above requirements, it may be well to consider somewhat more in detail the importance of maternal mortality. Certain maternal as well as other deaths are inevitable, but this should not in any way retard us in our progress for the elimination of those which are preventable.

Maternal and fetal deaths often go hand in hand. Abortion is undoubtedly the most frequent cause of fetal death, but the extent to which it contributes to maternal deaths is not commonly appreciated. Practically all fetuses born prior to seven months' gestation do not survive, so that any such ending may be regarded as a premature termination of pregnancy. Such endings are too frequently fatal to the mother. This is shown by some recent statistics from the Federal Children's Bureau covering 7,346 maternal deaths in which the period of gestation is known: 2,381, or practically one-third of the deaths, followed an interruption of pregnancy prior to the seventh month. Of these, 59 per cent died from sepsis, while of 4,965 patients dying after a pregnancy of seven months or over, 30.8 per cent died from infection and 31.2 per cent from toxemia.

Sepsis was the cause of death in 40 per cent of all cases included in the study. Twenty-five per cent of the deaths from all causes had been preceded by abortion. Of the deaths following abortion, 73 per cent were due to sepsis. Of the deaths following intentional abortion, 90 per cent were due to sepsis and of those following unintentional abortion, 60 per cent were due to sepsis. These figures clearly show that preventive measures are not as effectively used in preventing deaths from sepsis following abortion as they are following later deliveries.

In the future, according to the new International Code for Classification of Deaths, all maternal deaths from septicemia will be classified so as to show those preceded by abortion. Abortions are not reportable except in New York City and Maryland, where the registration of all products of conception is required.

The frequency of abortions and premature labors is much less among those women who seek and receive prenatal care. This is probably due, in part at least, to the desire of those, who seek prenatal care, to have children while those who have no such wish, avoid such attention. It is also probable that the more intelligent and better socially minded women receive such care whereas the more ignorant and irresponsible groups carelessly avoid attention until nature forces them into the hands of the most accessible attendant.

In the Children's Bureau's study the maternal death rates from abortion are higher among the negroes than the whites, and in urban than in rural districts, and in hospitals than in homes. Eighty-nine per cent of the women whose deaths followed abortions were married. Of the 1,587 abortions, for which information was secured as to type, it was found that 50 per cent were induced, 37 per cent were spontaneous, and 13 per cent were therapeutic.

It is impossible to estimate accurately the number of abortions occurring in this country. Certain calculations made in Germany indicate that there were about 240,000 abortions in that country in 1911,

a proportion of about one in every eight confinements, whereas in 1927 it is estimated that there was one to every single completed pregnancy.

In Russia, with legalized abortion, there has been an increase in legal abortions, which is attributed in part at least to the decrease in secret abortions. Similar conditions apparently exist in other countries.

One might ask whether or not there is developing a disregard for human life in its beginnings and if much of the mass propaganda of a commercial and other character which is permeating modern civilization does not have a far-reaching psychologic effect upon our ideals of life. One must confess that the open display of literature and devices in drug stores is a blow to one's ideals.

The so-called therapeutic abortion which is charged with about 13 per cent of the fatalities from abortion in the Children's Bureau's study is a makeshift and a confession of our medical ignorance, for we should ultimately have sufficient knowledge to save life without destroying it. The alleged social and economic reasons should be possible of other solutions by sociologists and economists working in conjunction with medical scientists.

Abortion, whether intentional or unintentional, is a very serious medical problem, and the increase in the number is doubtless an important factor in the failure to reduce our maternal death rate. Properly collected statistics should in the future clear up this point.

The subcommittee on the education of midwives has pointed out that the maternal death rate in this country where doctors attend most of the confinements, is higher than it is in Europe where well-trained midwives furnish the greater percentage of care. Their midwives are well trained while ours are not. Yet statistics in this country indicate that in general the mortality statistics from the cases attended by doctors are not better than those cared for by our untrained midwives. What is the answer? The doctors care for more abortions and more complicated cases, they use more anesthesia, they deliver more cases artificially, they come in contact with more infectious material and they give, as a rule, no nursing care. In defense, it might be added that the midwife has had, at best in this country, little or no opportunity for education and training. It should be stated that the doctor of a generation and more ago had more or less thorough theoretical training in obstetrics, but in his undergraduate days he was fortunate if facilities were available for him to see many normal and abnormal cases delivered, and that if he had supervised instruction while performing a delivery, he was an exception and not the rule. Midwife practice has never become an established institution in this country, and doctors have taken the responsibility for attending women in childbirth from the earliest pioneer days. When

they were not available some neighbor or friend more or less familiar with labor assumed the responsibility. There are only two schools for midwives in this country and they are recent. Until of late the supervision of midwives has been very lax and even now it is adequate in very few localities. The greatest need for midwives is in sparsely settled districts and among the negro population, especially of the South. This means that the midwife question is a local problem. There is apparent need for them in some sections and provision should be made to educate and train them in established institutions. It is imperative that subsequent to their education they work in the communities and among the people who need their services, otherwise there is no use educating and training them. The midwife should not be recognized as the person to fit into the ideal and ultimate scheme, but only as a stop-gap until the better plan of nurse and doctor, both working in their respective fields, can be evolved and established. It is essential that the midwife be trained and educated in her field of activity, that she be properly licensed and that she carry out her work under medical supervision and control.

The studies made by the subcommittee on obstetric education of nurses show that the education of nurses in the field of obstetrics has not been adequate. Their education in this branch should have as its objective their preparation for the complete maternal care of patients in the home and in hospitals. Certain numbers should receive special advantages to prepare them to go into the maternity and infancy branches of public health work. Others should receive the necessary education and experience to fit them for supervisors and teachers of obstetrics in hospitals and dispensaries. It is probable that there may be a definite field for a limited number of nurses, especially the colored, to receive thorough midwifery training so that they could act as direct supervisors of midwives under medical direction. There has been some discussion of training nurses to practice midwifery and replace our untrained midwives. This would perhaps provide some alleviation of the situation if they practiced where they were needed. It is very doubtful if it would be the best permanent solution.

We have, in this country, the nucleus of a plan which could be worked out and should be superior to any other in the world. There is a large body of nurses somewhat lacking in obstetric training, but who have had good fundamental training in nursing. There is a large group of physicians whose facilities for clinical training in obstetrics have been too meager. The plan of having doctors and nurses working in conjunction has been successfully tried with excellent results in a number of localities, in various institutions, and to some extent in the private practice of physicians. It is a conviction that the general extention of such a plan through the country would be superior to any other scheme which could be inaugurated.

In connection with obstetric nursing and to fill a need in the nursing of mothers and infants there should be a place for a group of well-trained personnel who could supply good nursing care to mothers and infants at a cost lower than that requisite for the more highly trained registered nurse. This need might be met by a system of hourly nursing such as is in vogue in many of the larger communities or by trained nursing attendants. On the other hand, this does not seem to entirely fill the gap. Some consideration has been given at various times to the latter, but no great progress has been made in reaching a solution. It might be debatable whether or not it was desirable to add to the already rather abundant nursing personnel less highly trained individuals. The question of an oversupply of nurses might be similar to the one with regard to physicians, namely, the problem of proper distribution. Some communities have a lack of sufficient nurses and medical personnel or seem to feel they are not well supplied whereas there is a superabundance in other sections.

Many people are unable to pay the nursing and medical fees required by intensively trained personnel. These services must be rendered by those of lesser but adequate training, who do not demand the high fees expected for more expert service. The trained nursing attendant and the medical practitioner with good training in obstetrics should go far in meeting the needs of the lower income groups.

The distribution of well-trained physicians to serve the various needs of the country without depletion in one section and congestion in another, is a problem apart from the education of a sufficient number, which is apparently being accomplished. The problem of proper distribution comes after the selection and education and graduation of the medical students though some attempts are being made by means of scholarship, etc., to place men where they will be needed after they have qualified to practice. It is possible that the future selection of men for the medical profession may be made on more careful scrutiny of their moral and intellectual qualifications with attention to their adaptability to the geographic, social and economic needs of various districts and to types of medical practice.

Appropriate, but sometimes ineffectual, attempts are made to select medical students from the standpoints of ability and character.

It is undisputed that there should be sufficient preliminary training of those with native ability in cultural, humanitarian and scientific knowledge prior to entrance into the medical college. Here instruction should be given in the preclinical basic sciences and be correlated with the subsequent clinical teaching. There should be a closer interrelationship between the preclinical sciences and the clinical branches of medicine by a keener interest of those teaching the basic sciences, in clinical facts, and of those teaching the clinical branches, in the fundamental sciences.

The curriculum should not be so sharply set off between the first and second biennium. It is probable that more dovetailing would be advantageous to both student and teachers.

The student should also be impressed with the idea that these basic sciences are requisite foundations to be utilized in his life's work. This could be accomplished by showing the relationship to the human being, by convincing the student that he is not working for credits and simply accumulating facts to be retained only until sufficient credits are obtained. Doubtless one of the best means of impressing this idea is by means of the comprehensive examination which could be required as a preliminary step to entrance into the work of the clinical years, when definite efforts should be made to keep up the contact of the students with some one or more of the basic sciences. This applies to all undergraduate students and to those who are taking postgraduate training, but it is of particular importance to those who by serious and intensive graduate work are preparing themselves for specialized private practice and especially to the smaller group who plan to take up careers as teachers and investigators.

It has been reported that the facilities for the education of physicians in obstetrics have not been adequate. The lack has not been so much along the line of theoretical training as it has in the application and especially in the clinical advantages. There can be no good obstetric practice in any country unless the doctors are thoroughly educated as well-trained obstetricians. This is the key to the situation.

The obstetric education of physicians must satisfy several demands which are essential to the best interests of maternity and infancy. In general, medical education must fill the needs of the country as a whole. There are many sections of the country where small communities and sparsely settled districts are unable to support or give the necessary facilities with which a physician can work satisfactorily. There are other communities in which there is sufficient work with compensation to support a physician though this community may not be in a position to supply the facilities which are necessary for the best type of medical work. It is natural that physicians should not seek these types of communities. They must have adequate compensation for a livelihood which problem could be met by subsidies, but in addition to this, most well-trained physicians of the present day feel the need of adequate laboratory, x-ray, and hospital facilities for the purposes of diagnosis and management of their cases. The movement for the establishment of rural hospitals should have a very definite effect in bringing about a proper distribution of physicians who are educated and trained to carry on this type of work. These physicians in these small communities must be general practitioners. It is therefore vital that the obstetric education should provide adequate training to this type of medical practitioners in the field of maternity and infancy.

Many physicians receive no more than undergraduate training. The majority of states and the majority of schools do not require an intern year. From our survey it is apparent that most undergraduates do not receive sufficient practical training in obstetrics. Those who secure the year's training as an intern are as a rule much better equipped, but even here there is not infrequently a lack of sufficient clinical experience in obstetrics.

In somewhat larger communities it is possible for men to undertake more or less specialization. A man might specialize in surgery and obstetrics or at least devote his major attention to these branches. He should have opportunity, by means of postgraduate courses of various types, to increase and improve his obstetric knowledge so that he would be in a position to furnish assistance to more general practitioners who have had less opportunity for perfecting themselves in these lines. This demand for postgraduate training could be met by courses in the various medical schools, by provision for such courses in various special maternity hospitals, by greater attention to obstetric clinics at medical society meetings and by extension and circuit courses which are perhaps somewhat better adapted to the needs of the general practitioner.

Provision must also be made for the adequate training of specialists in obstetrics and gynecology. There are movements in various institutions providing facilities for meeting this need. In the recent past it has almost been necessary for men to seek training abroad in the various women's clinics of Europe to secure such training. This is no longer imperative, but as yet the facilities in this country are too meager to train sufficient men adequately to supply the demand. This special training should cover a period of at least three years following the completion of a rotating internship and should consist of certain fundamental training in the basic sciences pertaining to maternity and early infancy, with abundant opportunity for clinical training in obstetrics, diseases of the newly born, and gynecology. Many European countries set up separate standards for general practice and for various specialists.

Efforts are being made in this country to require certain standards before a physician is recognized as a specialist in certain fields. The American College of Surgeons has set up certain standards with the idea of accomplishing certain ideals and of recognizing the best available men in the various communities. Other organizations and boards have set up various standards. Recently there has been formed the American Board of Obstetrics and Gynecology, which has begun to issue certificates to men whom they consider qualified for recognition as specialists in this line. This represents a progressive movement which deserves the encouragement and support of the medical profession.

It is necessary in a comprehensive educational program, as it pertains to obstetrics, to provide opportunity and facilities for the education and training of men, not only to become specialists, but also to become educators and investigators in the domain of maternity and infancy. This requires certain innate qualities and also a prolonged experience, preferably in association with outstanding men in these fields. It is difficult to place a time limit on such activities, but it is suggested that a minimum time period would extend from five to ten years. Education is, of course, a continuous and progressive matter, and one cannot arbitrarily divide it into time periods, but an outline as the above indicates in a general way the educational needs as they pertain to this branch of medicine.

It is vitally essential for the welfare of the community, particularly of mothers and infants, that we have qualified men in the various fields of activity which have been enumerated.

Various states have undertaken the responsibility of giving undergraduate medical instruction as is shown by the fact that there are 30 state medical schools of which 8 have only the instruction usually given in the first biennium. One could assume this is done on the theory that the state should fill the need of its citizens for medical practitioners. Some states have gone further and are now furnishing postgraduate instruction, not only to give special advantages to the practitioners of the state, but also to train specialists in various fields.

Inasmuch as maternity and infancy have become a state and even a national problem would it not be well to strike at the source and see that the personnel and the facilities for education in the branches of obstetrics and pediatrics are adequate, in these state institutions? This does not mean that such facilities should not be adequate in other types of medical schools, but it does mean that the states should definitely assume such responsibility for their own institutions. The various Acts and proposals of Congress indicate clearly that the problem of the proper care of mothers and infants is a matter of national concern.

Inasmuch as the education of physicians in obstetrics and pediatrics is absolutely fundamental and because the national government has already and in various ways supported educational institutions for military, agricultural and other purposes, it should be seriously considered whether or not it would be wise for the federal government to assist in building up adequate facilities for strong departments of obstetrics and gynecology and pediatrics in the state medical schools particularly.

There are other educational features which can be only rather briefly mentioned here. The social workers are very valuable adjuncts in carrying out proper maternity and infancy work. The

problem of illegitimacy alone opens up a wide range of activity which has been inadequately handled from the standpoint of both mother and infant.

Very little attention has been given to proper education and training of social workers in maternity and infancy work. An educational program for them in this field has been outlined in the report on the education of the laity. It is also important to see that obstetricians and other medical practitioners secure some idea of the importance of social service to their work and their patients. There should be some educational correlation so that the social service workers receive the medical viewpoint essential for their activities and that the medical students also obtain definite ideas relative to the social phases of medical work, particularly as it applies to maternity and infancy.

The social workers form an important bridge between the medical profession and the laity and should be very helpful in assisting to carry out educational programs among the laity.

Probably the most effective way of educating the laity is by personal contact with well-informed personnel. Numerous methods have been and are being used. The essentials are that the subject matter be accurate, understandable and interesting; that the methods of dissemination be appropriate and that those to whom the information is directed be reached.

Not infrequently inaccurate and misleading information is circulated. This is often based on fads or information which has not been definitely proved and is often productive of harm in that it leads patients to seek and even demand certain obstetric procedures which are not established and practiced by those who are best qualified to know. Publishers, reporters, and authors should have an opportunity to check the accuracy of articles which are submitted for publication. These articles may be good news, but not beneficial to the public. In the past it has not infrequently happened that certain procedures have been well advertised and achieved considerable popularity only to be discarded at a later date because they were harmful or not valuable.

Notable service has been done by numerous local organizations as well as those of state and national scope in educating the public in the fields of maternity and infancy. Some of these are governmental such as the Children's Bureau, the U. S. Public Health Service and the Bureau of Education, all of which have done good work.

The American Child Health Association, though primarily interested in Child Health, has materially furthered the cause of maternal care. Various local organizations, too numerous to mention individually, have by their example, propaganda and scattering of their personnel, extended their influence over wide areas. There are many national organizations, whose prime objects are not in the fields of

maternity and infancy, but which have indirectly exerted a tremendous influence for good by improving institutions, personnel and conditions surrounding mothers and infants.

It is noteworthy that none of these national organizations cover the field of maternity as their prime object. The Joint Committee on Maternal Welfare comes nearest to this objective, but its activities have been very limited for economic reasons and because its purposes have been mainly to interest the medical profession in better obstetrics. It might be well for this committee, as a nucleus, to enlarge its activities to form an organization which has as its primary object the consideration of the numerous problems surrounding maternity. It is apparent from the study of interested organizations that there is a lack of coordination, and while excellent work has been done, no one has made the development of maternal care its exclusive concern. There should be some nongovernmental organization to bring together and harmonize the activities of the many groups which have a greater or lesser interest in maternity.

It should be recognized that each person has to assume responsibility for his own conduct and welfare and that each community must solve its own problems, but many times outside stimulation with sane advice and material help is of enormous value.

There should be serious study of the plans of rendering service to mothers and infants in various types of communities under varying conditions. Much of value could be learned from the plans which have already been successfully operated in some localities. Some are moving along smoothly and with the expenditure of little effort to attract outside attention. Some of these plans may be more successful than others which are better known.

Each community knows some of its needs and usually some efforts are being made to meet them. They are not always well directed and are often inadequate, but these efforts nearly always have real merit and should be utilized in perfecting the organization of the work in that community. It should be possible to pull various agencies together so that they could fulfill their part of the general pattern. Infant Welfare Societies, Visiting Nurses' Associations, hospitals, dispensaries, settlements, medical schools, local nurses' organizations, medical societies and others, who are interested in maternity and infancy can be brought together to work out an adequate plan for furnishing appropriate care to mothers and infants during the prenatal, intranatal, and postnatal periods.

Smaller centers of population and rural communities present special problems which will have to be met in various ways. Doctors, nurses, and in some localities midwives, are necessary. Local and county hospitals and dispensaries would seem to be essential. The hospital facilities in some areas are entirely inadequate, even if avail-

able at all. Those available for negroes are more inadequate than those for the white population. In one city, which is probably better supplied with maternity beds for negroes than many others, it is necessary to send mothers home with their babies a few days after delivery, in order to make room for the new mothers arriving in labor. Practically no hospitals are available for them in rural communities. This lack of proper hospitalization for negro mothers may be a factor in their high mortality rate which is about twice that for the whites, though even with the same care in institutions having parallel services for white and colored mothers the mortality rate seems to be higher for the latter.

In all communities there should be the necessary institutions, material and personnel, be it doctors, nurses or midwives, for furnishing adequate and consecutive prenatal, intranatal and postnatal care. The studies made by the committee show that at the present time this is not available, and even in communities where it can be had, it is not universally supplied due to some defect in the educational plan, the scheme of organization, or to some lack of care or interest on the part of the potential mother or other individuals involved.

In addition to the routine care the committee's reports point out that there must be provision for special attention to nutrition, oral conditions, venereal disease, tuberculosis, heart disease, focal infections, and other medical and surgical complications. There should be some selection of cases which may need hospitalization. It is important to avoid emergencies in so far as possible and many of these can be foreseen or diagnosed early. In the study made by the Children's Bureau there were 1,893 cases past seven months' gestation who died in a hospital; 996 of these, or more than half, were emergency cases.

In small communities it is obvious that this care cannot be carried out by specialists, but the general practitioner, who is the backbone of the medical profession, can see that it is very well done if the proper organization and facilities are at hand.

For a long time the doctor has looked at medical problems from the standpoint of the individual patient; it is his duty to view these affairs from the standpoint of the community also. It is necessary that doctors, individually and collectively, through their medical societies, participate and assume leadership in matters pertaining to the health of mothers and infants, and provide consultation and other service where needed.

There are many social and economic problems surrounding mothers and infants which go hand in hand with medical problems. The social workers can be of enormous assistance in securing satisfactory and helpful service to these mothers and infants, who require special attention, from various agencies for either social, economic, or medical reasons.

There are many gaps in our knowledge regarding the factors and causes of morbidity and mortality of the mother, the fetus, and the newly born infant. It is essential to fill these gaps, but we should first strive to see that every mother and infant receives the benefit of the knowledge we already possess. If this is done it will be easy to apply new knowledge as it is acquired.

We know that such factors as race, environment, social and economic conditions, medical care, physical and mental status, period of pregnancy, complications, methods and grade of care and character of attendant and place of confinement all have much to do with the results.

In the maternal mortality study of the Federal Children's Bureau a report on prenatal care was secured for 5,636 of the cases. Of these, 53 per cent received no prenatal care, and in 72 per cent it was inadequate.

The character of the onset of labor was stated in 6,878 cases for which the period of gestation was reported. It was spontaneous in 4,411 cases; artificial in 1,686 cases; and in 781 cases there was no labor. Why should 25 per cent of these cases have an induction of labor, and 10 per cent be fatal with labor not having even started?

The termination of labor was reported in 6,657 cases in which the period of gestation is given. It was spontaneous in 3,428, artificial in 2,255 cases, and in 974 instances labor was not terminated. Why should there be 30 per cent of the fatalities with artificial termination, and about 12 per cent be undelivered?

Nearly one-third of the deaths followed an interruption of pregnancy prior to the seventh month, and in this group almost 60 per cent died from sepsis.

There must have been something wrong with the attention given to these mothers, especially when in the whole group of 7,380 deaths 40 per cent died from infection, 26 per cent from toxemia, and 11 per cent from hemorrhage. This makes a total of 77 per cent fatalities from causes which are controllable.

We do not have all the results for the fetuses and infants, but we do know that only 42 per cent of these pregnancies ended in live births. It is safe to say that the neonatal mortality and the morbidity rates in the others were very high. We do not know what sort of postnatal care the babies, who survived their mothers, received. Postnatal care, which in occasional cases may help to reduce maternal mortality, is more important from the standpoint of morbidity.

We have little statistical information relative to the morbidity of mothers, but probably half of the gynecologic operations are necessary as the result of poor care during pregnancy and childbearing.

The causes of maternal morbidity incidental to childbearing are

birth injury, infection, and toxemia. Much has been and can be done to alleviate these conditions, and it is only fair to state that, while mortality is taken as the standard for the comparison of results, morbidity though less tangible should also be considered.

We have mentioned the effect of various procedures and events upon the mother, and now it is important to state the causes of fetal and early infant mortality and morbidity. In 1929 approximately 31 per cent of the infant mortality in the birth registration area was due to prematurity, congenital debility, and syphilis; 8 per cent was due to congenital malformations; 8 per cent to injury at birth; and 8 per cent to other diseases of early infancy and to unknown or ill-defined causes. The causes which are more or less amenable to management during the prenatal period are prematurity, maternal toxemias, infections and syphilis, all of which can be controlled in a measure to the benefit of the fetus.

Malformations might perhaps be controlled by preconceptional care, but as yet we do not know how to accomplish this.

During the intranatal period much can be done by adequate care to limit the number of deaths caused by suffocation, aspiration, and injury to the central nervous system, as well as other types of birth injury which do not lead so frequently to fatalities as to morbidity. Injuries to the brain and cord are often responsible for the failure to establish respiration. Infants with birth injuries may be born dead, die soon after birth, live a longer or shorter period with varying amount of disability, or apparently recover. These injuries are of the utmost importance in causing both mortality and morbidity, and cannot always be avoided. They occur especially in premature infants. They follow after spontaneous labors of a short, violent type, prolonged, hard labors, instrumental deliveries, breech extractions, versions, and even after cesarean sections.

The postnatal causes of fetal death are thermic, due to isolation or refrigeration, which are particularly dangerous to the premature infants; to chemic causes, to infections or to disturbances of nutrition. Proper postnatal care should begin immediately with birth and be followed through consistently.

Prematurity can be greatly reduced by proper prenatal care. Syphilis in the fetus could be eliminated by adequate preconceptional care. Toxemias can be controlled with the saving of some infant lives. Infections causing fetal death and disease can be lessened. Deaths from suffocation and aspiration can certainly be reduced, and the mortality and morbidity from birth injuries can surely be diminished. Practically all of the postnatal causes of death could be controlled, if not eliminated. We all admit that our present knowledge is inadequate in many respects, but we make an urgent plea for the universal application of that which we do possess.

We would like to know more about the problem of abortions and the factors producing or leading up to them whether intentional or unintentional. The morbidity and mortality resulting from this is very great. There is much to learn about premature births and their causes. There are many deaths in fetuses and the newly born which are difficult to explain on clinical or pathologic grounds. There is much to learn concerning the effect of various maternal states and diseases upon the fetus.

We know much about infection which takes its toll of mothers and infants, but there are still some unexplained facts, relative to susceptibility and immunity, which are of considerable importance.

Of the causation of toxemias we are in virtual ignorance though much data have been accumulated.

So much that is lacking in fundamental knowledge is pointed out in the detailed reports of the committee that time and the scope of this address will not permit of detailed enumeration. In anatomy, which is relatively old and more or less stable, there is still much to be added to our information pertaining to the fetus and mother. The pathology of the embryo, fetus, and newly born is still a fertile field for investigation, and the mother presents many unsolved pathologic problems especially in regard to the toxemias. Bacteriology, and especially immunology, could contribute much if a way of preventing maternal, fetal and infant infections could be shown. Physiology with chemistry of various categories is now an actively fertile field in the study of sex and growth hormones. Nutrition of both the pregnant mother and the fetus, and of the lactating mother and infant, are problems which will require a vast amount of work for solution.

Eugenics hardly comes within the scope of this conference and yet many infants are born who are useless or worse in our social scheme, so we would like to know more about hereditary influences and be able to prevent the birth of those who are defective and constitute a burden or menace to society. If we could be certain of our laws of heredity as applied to human beings, the prevention of the birth of these individuals by stopping the procreative powers of their parents would be a blessing to humanity. It is difficult to know just how far to go with such a program, but we should progress slowly but surely.

In conclusion, it may be stated that the present situation with regard to maternity and infancy is not satisfactory.

To remedy this situation our present knowledge must be generally applied so as to provide appropriate preconceptional care to insure the proper growth and development of normal parents who reach the reproductive period healthy and free from venereal and other transmissible diseases and from other conditions which may make childbearing dangerous to them or the fetus or a hazard to society. These

parents must be imbued with the desire to have normal, healthy children in sufficient numbers to perpetuate the best there is in our human race.

Prenatal care of adequate degree must be followed by competent intranatal and postnatal care for the health and protection of both mother and infant. In order to accomplish these, it is necessary to have properly trained and educated doctors, nurses, midwives, dentists, social workers, mothers, and laity, who come in contact with the problems of maternity and infancy.

In addition it is necessary that proper organizations be set up in various communities, that the necessary institutions be established and the essential personnel be supplied. Luxuries are not lacking in this country; surely it is not a luxury to prevent morbidity and mortality among mothers and infants. Perhaps we are becoming too ease-loving and self-satisfied and may be losing some of our sense of proportion and ideas of fundamental values.

The doctors individually and collectively should lead in these movements to secure the health and protection of both mothers and infants. We should apply and disseminate our present knowledge, and our basic and other medical scientists should continue, as they will, to push forward so that new knowledge may be secured which will add to the security, improvement, health, and happiness of future generations.

THE UNDERGRADUATE TEACHING OF OBSTETRICS*

By Palmer Findley, M.D., Omaha, Nebr.

TO APPRECIATE the importance of undergraduate teaching of obstetrics as a determining factor in maternal and infant mortality, we do well to inquire into the conditions which prevail in countries which have a lower mortality rate than do we in the United States of America.

The indictment has been made by many of our American contemporaries that the United States ranks highest among the civilized nations of the world in maternal mortality. Their statements have been challenged on the ground that the maternal mortality statistics of the United States and foreign countries are not comparable. A special subcommittee of the Committee on Prenatal and Maternal Care is studying the comparability of these statistics but its report is not yet available. In the absence of later data the committee wishes to call attention to a discussion of the Statistical Comparability of Maternal Mortality Rates in the United States and Certain Foreign Countries in a report on Maternal Mortality published by the Fed-

*Report of Section a, Subcommittee I, on Obstetric Teaching and Education of Physicians, Nurses, Midwives, Social Workers, and Laity.

eral Children's Bureau. From this report it appears that the reporting and classification of maternal deaths are fairly comparable in the countries from which statistics are quoted.

The comparison of the maternal mortality rates of the United States and foreign countries has been challenged also on the ground that the statistical comparisons were made in the years 1918-19, during which time the United States was experiencing a ravaging epidemic of influenza. It should be borne in mind that the influenza epidemic of 1918-19 was not confined to the United States but was fully as virulent in Europe during these years. Granting the inevitable inaccuracies of statistics the committee appealed to the Children's Bureau of the U. S. Department of Labor for data from the most dependable source. Under date of June 5, 1930, the Children's Bureau published a statistical table embracing official reports from 25 nations, beginning with 1915 and ending with 1928.* During these years the United States birth registration area expanded from 10 to 44 states. We find in this report that Sweden has fairly consistently maintained the lowest maternal death rate and that the United States has averaged highest of the 25 nations represented in this tabulation. Excluding the influenza years of 1918-19 the statement still holds good that the United States exceeds the other 24 nations in maternal mortality. Omitting the influenza years of 1918-19 and for purposes of comparison, taking the years of 1922, 1923, 1924 and 1925 (there are no available returns from Sweden since 1925), we find that the maternal mortality rate in Sweden was 25, 23, 24, and 26 respectively per 10,000 live births and in the United States, in the same period of time, 66, 67, 66, and 65, a ratio of approximately 1-2.5. Again excluding the influenza years of 1918-19 we find that the first three years represented in the statistical report of the Children's Bureau (1915-16-17), compared with the last three years (1926-27-28) show a maternal mortality of 61, 62, 66 per 10,000 live births, as compared with 66, 65, 69 per 10,000 live births. These rates would bear out the contention, often advanced, that our maternal mortality has not been lowered since 1915, but on the contrary there has been some slight increase in the expanding birth registration area.

Dr. Janet Campbell, reporting for the British Medical Society on "The Protection of Motherhood," 1927, gives England and Wales a maternal mortality rate in 1915 of 39.4 for 10,000 live births and 41.2 in 1926. In France the death rate was 60 for the years 1915-1919 (war years) and Germany (1920-24) has a mortality rate of 51. Norway and Holland share with Sweden with a maternal mortality rate of 25 and 26 respectively for the year of 1925. Dr. Campbell, in commenting on the report said: "The analysis of the causes of deaths serves to show that the majority of fatal cases should be under the

*See page 842.

control of preventive methods and is a striking brief for the urgent need of prenatal care."

It is a thought-provoking commentary that the maternal mortality in the United States during the years of the World War far exceeded that of France, Italy, Hungary, Czechoslovakia, Belgium or England.

Whatever other factors may be operative in producing so wide a discrepancy in the maternal mortality rate of the United States of America as compared with that of Holland and Scandinavia, it is evident that lack of the superior clinical facilities afforded by these countries accounts in no small measure for our deplorable results. In the curricula of the medical schools of Holland and Scandinavia obstetrics shares equally with internal medicine and general surgery, while in the United States, until quite recently, the proportion of teaching hours in general surgery as compared with obstetrics was 4.5 to 1; it is now approximately 2 to 1. Furthermore, the facilities for clinical teaching in Holland and Scandinavia are vastly superior to those found in most of our teaching institutions. In the University of Lund, Sweden, for example, the students devote four months to clinical obstetrics. Each student will have personally conducted an average number of 38 to 40 labors, 1 or 2 forceps cases and 1 or 2 abortions. Some will have performed versions, manual delivery of the placenta and like maneuvers. The students are closely supervised in all their work and have abundant opportunity of witnessing obstetric procedures conducted by the teaching staff. Prenatal and postpartum instruction is stressed in the clinic. Nowhere in the United States can we approach such clinical instruction.

The comments of Aleck W. Bourne, on the teaching of obstetrics and its bearing upon maternal mortality in England apply with added force to conditions existing in the United States. He writes: "The solution of the problem lies in the medical schools, and while we can proudly point to many advances in obstetrics, we are unable to include the teaching of obstetrics as an example of these advances. The bed accommodations in general hospitals are still very inadequate for teaching purposes, and the time devoted to the teaching of this branch of medicine is too short. As a subject of instruction midwifery should rank equally with medicine and surgery."

To ascertain, in detail, the manner in which obstetrics is being taught to medical students, questionnaires were sent to all Deans and to Obstetric Department Heads of all medical schools in the United States, to a large number of hospitals throughout the country and to a selected group of graduates of all medical schools for the purpose of ascertaining how well their undergraduate training in obstetrics prepared them for the general practice of medicine. Following is a brief summary of the replies to these questionnaires:

MEDICAL DEANS

Questionnaires were sent to the Deans of all Medical Schools which provide for four years of instruction. The response was most gratifying, all but seven schools returning more or less complete questionnaires.

In response to the inquiry, *Do you favor a unified department of obstetrics and gynecology?* there was a total of 56 replies with 42 in the affirmative and 14 in the negative. It is gratifying to the committee to note the evident approach to the conditions prevailing on the Continent where the two subjects are almost uniformly combined.

There were 55 responses to the inquiry: *In what years are obstetrics and gynecology taught?* Of this number, 38 answered Junior and Senior years; 17, Sophomore, Junior and Senior years and 2 failed to report. Then followed the inquiry: *In your opinion, in what year should this instruction begin?* There were 55 replies with 35 favoring the Junior year, 22 the Sophomore year. We are to infer from the replies of the Deans to this inquiry that approximately 60 per cent of them favor confining the instruction in obstetrics and gynecology to the Junior and Senior years.

The committee was desirous of ascertaining whether or not there exists in our medical schools a satisfactory *correlation between the teaching of obstetrics and gynecology and the basic sciences.* Accordingly Deans Charles Poynter of the College of Medicine of the University of Nebraska and J. M. H. Rowland of the College of Medicine of the University of Maryland were requested to make a report of their findings and opinions on this question. Their report is to be printed separately. These men are well qualified to pass judgment on this important problem because they have taught the basic sciences, and both have practiced a clinical specialty—one obstetrics and gynecology and the other general surgery. The Deans of 51 schools replied to the inquiry on this point in the questionnaire, 20 in the affirmative, 28 in the negative, and 3 who were only "fairly satisfied."

In a large proportion of the Continental schools a *resident maternity service* is required of the students. We desired to know to what extent this exaction is maintained in the United States and whether the Deans favor the requirements. Replies were received from 57 Deans, of which number 53 expressed themselves in favor and only 4 were unfavorable. However, in response to the inquiry as to whether it is possible to give such a service to their students, only 30 replied in the affirmative, 17 said it was impossible, and 6 were able to give a partial maternity service. In the opinion of the committee this is a problem of prime importance. Such a service would provide direct contact with patients under competent supervision, and it is contended that the opportunity to live in an obstetric atmosphere for a

given time will add greatly to the efficiency of clinical teaching. A maternity service is indispensable if we are to attain to the ideal in the teaching of obstetrics.

We asked the opinion of the Deans as to what, in their judgment, is a *reasonable number of labors for a student to observe.* There were 50 replies to this inquiry. The numbers ranged from 2 to 10 in 10 replies the lowest number being 5, from 11 to 20 in 17 replies, from 21 to 30 in 16 replies and from 40 to 50 in 7 replies. In 39 schools it was possible for the student to observe the number of deliveries which the Dean considered reasonable, in 10 it was not, and one did not report.

The Deans were next asked, *"What is a reasonable number of labors for a student to deliver?"* There were 54 replies. The numbers were as low as 2, 3, 4, 5, 5-6, 7, 8-12, 6-12 deliveries respectively in 8 replies, 6 deliveries in 8 replies, and 8 deliveries in 2 replies. Thirty Deans specified numbers ranging from 10 to 15-20, and six thought the number should be 20 or more, highest number being 30 in one reply. In 37 schools it was possible for the student to deliver the number of patients that the Dean considered reasonable, but only three of these were in schools where more than 15 cases was considered the reasonable number to deliver.

To the inquiry, *Is a hospital intern year required for the degree of M.D., and if so is a maternity service required?* there were 57 replies with only 10[1] reporting that a hospital intern year is required before granting an M.D. degree; in 7 of this number a maternity service is required. The committee is of the opinion that a universal requirement by all medical schools for a rotating hospital service for one year, embracing an adequate maternity service, would go far in solving the difficulties incurred in providing sufficient clinical material in obstetrics for the student body.

As to the *kind of instructors* favored by the Deans, 57 replied; 3 in favor of all full-time instructors, 18 for part-time instructors, and 36 for both.

Finally, to the inquiry as to whether *voluntary and unpaid instruction* in obstetrics and gynecology has been satisfactory there were replies from 51 Deans, 23 answering in the affirmative, 28 in the negative.

GRADUATES OF MEDICINE

With the thought in mind that much valuable information might be procured from recent graduates of medical schools, questionnaires were sent to six graduates of each of the schools listed as giving a four-year course. The years 1921 to 1928 inclusive were chosen. We wanted to obtain from them an expression of opinions as to the value

[1]There are 13 medical schools in the United States that require a hospital intern year before granting an M.D. degree. In one of these the requirement becomes effective in 1933.

of their instruction in obstetrics and gynecology in meeting the demands of the general practice of medicine. There were 158 replies to our questionnaires, 6 from the class of 1921, 55 from the class of 1922, 1 from the class of 1924, 4 from the class of 1926, 84 from the class of 1927, 3 from the class of 1928, and 5 not reporting the year of graduation.

Respecting the *length of service* in a maternity, as students and as interns following graduation, we find 8 report a service of 21 to 46 days, 20 of 6 to 16 weeks, 95 of 1 to 12 months, 1 of 18 months and 1 of 48 months. There were 16 of the number who report no maternity service; 17 not replying.

Table I shows the number of deliveries conducted by these graduates during their junior or senior years, or as interns.

TABLE I. NUMBER OF GRADUATES CONDUCTING SPECIFIED NUMBER OF DELIVERIES AS

DELIVERIES	JUNIOR	SENIOR	INTERN
1– 10	33	55	12
10– 20	16	37	18
20– 30	6	17	21
30– 40	4	10	14
40– 50	–	3	5
50– 75	–	5	25
75–100	–	–	10
100–150	–	1	12
150–200	–	–	7
200–501	1	–	7
Assisted	2	–	–
None	81	18	13
No report	15	12	14

These graduates were asked if their *lectures were illustrated by charts, lantern slides, movies, and specimens.* It was revealed in the answers that charts had been seen by 122, slides by 65, movies by 23, and specimens by 115. No charts had been seen by 25, no slides by 69, no movies by 113, and no specimens by 12. It would appear from these reports that at the time referred to (1921-1928) lectures on obstetrics and gynecology were not illustrated by charts, lantern slides, movies, and specimens to the extent justified by their value. However, it is presumed that this important feature of the lecture system is receiving more and more favorable consideration.

In answer to the inquiry concerning *special laboratory instruction* in obstetrics and gynecology only 57 report special laboratory instruction in obstetrics and 62 report special laboratory instruction in gynecology.

In respect to *manikin courses* we learn that of the 158 graduates 111 were permitted to perform obstetric manipulations on the manikin, 47 were privileged to witness such procedures, while 32 did no manipulations on the manikin and 95 had no demonstrations. As to hours devoted to these operations and demonstrations we find about

one-third of the number had less than ten hours in these exercises, another third less than fifteen hours and the balance from sixteen to ninety hours. Not a creditable showing for so valuable an adjunct to obstetric teaching.

We were desirous of learning to what extent *students are permitted to deliver cases in the home,* unattended by a capable instructor and clinician. Of the 158 answering this inquiry, there were 96 who were so accompanied, most of the remainder were neither accompanied nor instructed by a competent obstetrician. In a single instance or two it is recorded that they were accompanied by a senior student or intern and a few others replied that they were accompanied sometimes, or in complicated cases. The committee can see no justification for the practice of permitting students to deliver women in their homes unaccompanied by a competent instructor.

Of the 155 replies to the inquiry: *Did you have a resident service in a maternity?* 78 replied in the affirmative and 77 in the negative. In their residency 7 observed 1 to 10 cases and 25 delivered an equal number, 21 observed 10 to 20 cases and 19 delivered a like number, 21 observed 20 to 50 cases and 8 delivered an equal number, 10 observed 50 to 100 cases and 5 delivered an equal number, 7 observed 100 to 301 cases, and 2 delivered an equal number, and 1 observed 500.

Table II shows the number of abnormal cases seen by these graduates when they were students and interns.

In respect to the *time employed in prenatal clinics as students and interns* we find that out of 149 replies only 3 report 12 to 40 hours, 34 report 1 week-4⅛ months, 40 from 1-3 months, 14 from 4-6 months, 12 from 4-12 months. About an equal time was employed in postnatal clinics. There were 15 who reported no prenatal clinic work; 49 no postnatal clinical experience and 7 did not reply.

In the opinion of the group *gynecology was well correlated with obstetrics.* This was the expressed opinion of about four-fifths of those reporting.

HEADS OF DEPARTMENTS OF OBSTETRICS AND GYNECOLOGY

Replies were received from the Heads of Departments in 40 schools. Of this number 20 have combined departments of obstetrics and gynecology and 20 have separate departments. In the latter group of 20 schools there are two in which gynecology is combined with surgery. Where the departments are combined the explanation given for the combination is, in the majority of instances, for administrative and pedagogic reasons.

Of the 20 schools in which *gynecology and obstetrics are combined* 15 regard obstetrics as the major subject, one regards gynecology as the major, 3 regard them as equal in importance, and one does not report. Again we find in the group of combined chairs that the Head

TABLE II. NUMBER AND TYPE OF ABNORMAL CASES SEEN AS STUDENT AND AS INTERN*

	ABORTIONS		TOXEMIAS AND ECLAMPSIAS		CONTRACTED PELVES		PLACENTA PREVIA		ABLATIO PLACENTAE		POST-PARTUM HEMORRHAGE		BAG INDUCTIONS		FORCEPS		VERSIONS		EPISIOTOMIES		PERINEORRHAPHIES		MED. AND SURG. COMPLICATIONS	
	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN	STUDENT	INTERN
TOTAL	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158	158
1– 5	43	16	58	38	58	44	58	66	17	31	45	61	51	50	53	17	66	67	41	20	31	12	31	28
5– 10	20	19	14	22	15	29	6	17	1	2	5	17	9	20	30	17	10	19	17	16	18	12	14	18
10– 15	14	13	14	20	1	9	–	8	–	3	–	6	2	9	13	18	2	10	7	17	12	11	4	14
15– 20	1	7	4	14	1	1	–	1	–	1	2	–	1	4	5	10	2	4	6	7	4	10	1	4
20– 30	8	19	–	8	–	1	–	–	–	–	–	3	1	2	6	29	–	4	4	12	4	15	2	10
30– 50	1	13	–	4	1	2	–	–	–	–	–	–	–	2	1	11	–	1	1	10	6	13	–	1
50–100	1	12	–	3	–	–	–	–	–	–	–	–	–	–	1	6	–	2	–	3	2	15	1	1
100–150	–	6	–	1	–	2	–	–	–	–	–	–	–	1	–	3	–	–	–	4	–	8	–	–
150–200	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
200-301	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2	–	1
Some	13	18	10	13	17	13	6	7	8	8	11	15	4	8	10	13	7	10	14	23	18	21	30	31
None	34	11	36	12	39	31	63	34	100	81	69	32	63	36	19	12	47	18	45	23	39	16	46	21
No report	23	22	22	23	26	26	25	25	32	32	26	24	27	26	20	21	24	23	23	22	24	23	29	29

*See page 800.

of the Department is an obstetrician in 17 of the 20 schools and that he is a practicing obstetrician in every instance. Three of the Heads report that they do not practice obstetrics but do practice gynecology. In the 20 schools having a combined department all but one Head practice gynecology (one not reporting), and with but 3 exceptions they also practice obstetrics. While it may be unreasonable to require of the Head of a combined department that he shoud be equally qualified in the two fields, a near approach to this ideal would be desirable. The two subjects are so intimately related as to be inseparable and the Head of the combined departments should have a practical as well as a theoretical knowledge of both.

We are pleased to note that in all of the combined chairs the department Head conducts classes in obstetrics; didactic in every instance and clinical in all but one instance. Gynecology, however, is not taught didactically by 6 of the Heads and clinically by one. From this we would infer that the two types of cases appear in the clinics.

The question was asked whether ideal results would obtain in a combined department if the Head of the Department were an obstetrician only or a gynecologist only. The answers to this inquiry were not convincing in that they were evidently inspired by the personal attainments of the man who happened to be the Head. If a gynecologist, the answer would be "yes," if an obstetrician the answer would be "yes," but if he were both an obstetrician and a gynecologist the answer would be "no." Again the question was asked, Is it necessary for a Head of Department to have an avid interest in both obstetrics and gynecology? Of 52 Heads answering, 7 answered "no," 4 did not report and 40 said "yes."

Should an obstetrician practice gynecology? This question was answered in the affirmative by 36, in the negative by 3, and 1 made no report. It was contended that the exactions of an obstetric practice would unfit one for operative work. The committee finds difficulty in assenting to this criticism.

Replies received from Heads of Departments in 40 schools disclose but 13 schools having *special maternity hospitals affiliated with their schools.* The number of beds in these maternity institutions ranged from 39 to 200 and about an equal number of cribs. The total number of obstetric beds in the affiliated maternity hospitals was under 100 for 7 schools and over 100 for 6 schools. The total number of deliveries in affiliated maternity hospitals was less than 500 for 3 schools, 500-2000 for 4 schools and above 2000 for 5 schools. The duration of student residence in the affiliated maternity hospitals varied from one week to one month for 9 schools reporting. The students were assigned in groups of 2, 3, 4 and 6. The number of deliveries conducted or assisted in by students in affiliated maternity hospitals was less than 20 in 9 of the 11 schools reporting on this item. In two schools

the students had opportunity for witnessing as many as 60 deliveries. Twenty-eight medical schools reported affiliations with 48 general hospitals. Several schools did not reply to this question. Only 1 of the 48 hospitals was reported as not having a segregated division for obstetric service, and 1 school failed to answer this question. Twenty-nine reported on the number of normal deliveries students saw in affiliated general hospitals. In 13 schools the number was less than 15, in 9 schools it was 15 to 30, and in 7 schools it was more than 30. The size of the student group attending a delivery was usually less than 10. Seventeen schools reported on the number of pathologic cases seen by students in general hospitals. In 8 schools they saw from 1 to 5 cases, in 5 schools from 6 to 10 cases and more than 10 in 4 schools. Twenty-eight schools replied to the question on the number of deliveries conducted by students in general hospitals. In 11 schools the number of student deliveries ranged from 1 to 10 and in 8 schools the number was over 10 (one said "6-20") ranging as high as a possible 30 in 2 schools. In 9 schools the students conducted no deliveries but in 6 of these they had an opportunity to assist at deliveries. It is in this particular that obstetric teaching in the United States suffers most in comparison with Continental institutions. Witness the University of Lund, Sweden, where the students devote four months to clinical obstetrics as residents in a maternity hospital where they deliver an average number of 40 patients, and where the students are permitted to make one or two forceps deliveries and to supervise one to two abortions. In all this they are rigorously supervised and have opportunity of observing large numbers of normal and pathologic cases. With such clinical facilities afforded medical students, and midwives to a like degree, it is small wonder that Sweden leads the world in low mortality rate.

The questionnaire study showed that *prenatal clinics* were in operation in 37 of the schools and in one the clinic is in process of organization. Of this number 12 clinics were open less than ten hours a week and 19 were open ten to twenty hours a week. In a single instance the clinic was open forty hours a week. Six schools failed to report on this item. The daily attendance was 20 or more in about one-half of the clinics. In 2 clinics the attendance ranged from 30-50 and in 1 from 40-60. Each of 9 prenatal clinics reported an average yearly attendance of more than 5000 patients and each of 11 clinics reported 2000 to 5000. The balance either had less than 2000 or did not report on this item. (The figures on attendance were interpreted to include return visits.) The number of students in attendance at the clinics daily ranged from 2 to 18, 10 schools reporting more than 6 students in attendance per day. In 14 schools the students spent twenty-five hours or more in the clinics. In the other schools reporting, the time was less than twenty-five hours. The number of

patients seen at these clinics by each student was less than 10 in 4 schools, more than 10 but less than 25 in 3 schools, between 25 and 50 in 8 schools and 50 or more in 12 schools, running over 100 in five schools. The others did not report. The number of patients examined by each student at clinics was about the same as the "number seen" in most of the schools. In 27 schools students were required to practice both external and internal pelvimetry; in one school they practiced internal pelvimetry occasionally and in 8 schools they practiced only external pelvimetry. It is encouraging to note that so large a proportion of the schools have prenatal clinics. It is evident that in most institutions this important phase of clinical teaching is not developed commensurate with its importance but it is a beginning that augurs well.

Thirty-three schools reported *postpartum clinics* in operation. Two more had them in course of organization. The average time these clinics were open was two to six hours a week. About one-third the number were open ten to fifteen hours and 1 for forty hours. The daily attendance ranged from 1 to 5 a day to 15 to 20; the highest 40 to 50. Twenty-four schools reported the yearly attendance at postnatal clinics. In 3 schools it was reported to be less than 200; in 12 schools the attendance was between 200 and 500, and in 9 schools it was more than 500, running as high as 1500 in 3 schools and 600 in one. The number of students in attendance per day in the postpartum clinics ranged from 1 to 12, the average being around 6. Their hours in attendance are in some instances elective and when required they average about 20 with a minimum of 5 and a maximum of 66. Here again we find encouragement. The ideal in obstetric practice is to follow through in the endeavor to leave a healthy mother in possession of a healthy child, hence the importance of postpartum observation and direction.

Thirty-five schools had a *home delivery service*, two had none, and three did not report. Students were reported as conducting home deliveries in groups of 2 usually, but sometimes alone or in larger groups. All schools reported some supervision of students by physicians in conducting home deliveries, but in 24 it was intermittent and in 2 it "depended on the case." In 17 schools students conduct labors to conclusion unsupervised. Ten of these qualified their answers as follows: Five stated "if they are normal"; two, if they are "normal multipara"; one, "after two supervisions." Two other schools replied "sometimes" and "not always" respectively. Thirty-one reported on the number of patients delivered in their homes by students. Four schools reported none and one said "voluntary." In 18 schools the student delivered less than 10 patients; in 8 schools he delivered 10 or more. Nineteen schools reported on the number of home deliveries *seen* by students. In 12 schools they saw less than 10, in 7 schools

10 or more. For students to conduct labors to conclusion and unsupervised is an indefensible practice in the judgment of the committee. Such conditions are not in the interest of the public and are worse than valueless to the student.

Twenty-seven schools reported that students made *local examinations.* These were usually specified to be rectal and abdominal, only two schools saying that students made vaginal examinations, and in one of these he was permitted to make only one vaginal examination. The replies to the following queries were as follows: Are you satisfied with your clinical facilities? Yes—14, No—23. Are you satisfied with your staff personnel? Yes—19, No—18. Are you satisfied with your equipment? Yes—14, No—22. *Have you the block system for your clinical teaching of obstetrics?* Yes—20, No—16. Are courses and hours in Internal Medicine disproportionately great as compared with obstetrics? Yes—12, No—24. *Are courses and hours in surgery disproportionately great as compared with obstetrics?* Yes—24, No—10, Questionable—2.

COMMENTS OF HEADS OF DEPARTMENTS

It is of interest to note the various comments of Heads of Departments appended to the replies from questionnaires. Following is a summary of their expressions:

1. No student should be permitted to take the State Board Examination until he has completed several months of maternity service.
2. A longer required maternity service for students is essential.
3. Conditions would be improved by "trying to impress upon medical school administrators that obstetrics is an art, not a joke."
4. More money is needed to pay Junior full-time men.
5. All schools should have a Maternity Hospital connected with the University Hospital where students may reside. Increase of obstetric beds absolutely controlled by the schools, in a separate building but in direct physical connection with the University Hospital. Greater effort on the part of the obstetric department in the training of teachers and research workers.
6. More time for better teaching and for practical work.
7. More free beds and more patients to fill them.
8. Full-time instructors on indoor and outdoor services.
9. Fewer home deliveries or even none, and more opportunity for hospital training.

HOSPITALS

In order to secure information on the length of time interns spend in the obstetric service and the amount and kind of obstetric teaching material available in hospitals, questionnaires were sent to a large number of hospitals throughout the country. There were 241 replies suitable for tabulation from general hospitals with an obstetric

service. One hundred and eighty-one of these are on the list of hospitals approved for internships by the Council on Medical Education and Hospitals of the American Medical Association and comprise a little more than one-fourth of the hospitals included on that list. It is thought, therefore, that the data given, which are for the year 1929, are fairly representative.

The hospitals were divided into four groups for purposes of tabulation as follows: Group I, those having less than 300 deliveries during the year; Group II, those having 300 to 599 deliveries; Group III, those having 600 to 999 deliveries, and Group IV, those having 1000

TABLE III. OBSTETRIC INTERNSHIPS IN GENERAL HOSPITALS

HOSPITALS GIVING SPECIFIED INFORMATION RELATING TO INTERNSHIPS IN OBSTETRICS	LENGTH OF OBSTETRIC SERVICE AND NUMBER OF DELIVERIES PER INTERN IN HOSPITALS GROUPED ACCORDING TO NUMBER OF DELIVERIES			
	GROUP I. HOSPITALS HAVING LESS THAN 300 DELIVERIES	GROUP II. HOSPITALS HAVING 300 TO 599 DELIVERIES	GROUP III. HOSPITALS HAVING 600 TO 999 DELIVERIES	GROUP IV. HOSPITALS HAVING 1000 TO 2000 DELIVERIES
Number of hospitals in each group	57	107	50	27
Number of deliveries in these hospitals	11,678	45,084	38,252	35,709
Number of hospitals offering rotating internships, reporting on number of deliveries and number of interns	56	92	47	19
Number of deliveries in these hospitals	11,478	38,967	35,951	24,588
Number of interns	270	578[1]	396[1]	382
Number of hospitals offering rotating internships, reporting on number of interns on staff and length of intern's service in obstetrics[2]	43	79	41	18
Average length of obstetric service per intern	2.6 mo.	2.3 mo.	2.5 mo.	1.8 mo.
Average length of obstetric service per hospital	3.6 mo.	3.0 mo.	2.5 mo.	2.4 mo.
Number of deliveries per intern if all interns took obstetric service:				
Minimum number per intern in any hospital	11	9	24	17
Maximum number per intern in any hospital	149	272	309	300
Number of hospitals having specified number of deliveries per intern:				
Less than 25	12	7	1	1
25 to 49	7	15	3	3
50 to 99	23	32	10	3
100 to 199	1	22	23	8
200 and over	–	3	4	3

[1]Includes 3 residents in one hospital which had residents instead of interns.

[2]In a few instances the service in obstetrics was combined with gynecology or surgery, but in most cases there was a service in gynecology in addition to the obstetric service.

to 2000 deliveries. In the discussion the groups are referred to by number. Tables IV and V show the main points in the tabulation.

Type of Internship.—In the absence of specific information to the contrary, all internships were classed as "rotating," using the term in a broad sense to cover all hospitals not giving "straight services." Only 17 hospitals indicated on their questionnaires that they offered a "straight service" in obstetrics, or in obstetrics and gynecology combined. As might be expected, 7 of these were in Group IV.

In most of the hospitals giving rotating internships there was a service in gynecology, or in gynecology and surgery combined, in addition to the service in obstetrics; 12 hospitals reported obstetrics combined with gynecology, and in two others it was combined with something else. A few hospitals made no report or else gave indefinite replies.

Length of Intern's Service in Obstetrics and Number of Deliveries per Intern.—

Averages were made for the following items:

1. Length of the obstetric service per intern in those hospitals with a rotating service that reported on both the number of interns and the length of the obstetric service. This average varied from 1.8 months for interns in the hospitals in Group IV to 2.6 months for interns in the hospitals in Group I. (See discussion below.)
2. Length of the obstetric service per hospital. This average ranged from 2.4 months for the hospitals in Group IV to 3.6 months for those in Group I.
3. Average number of deliveries per intern.

The averages on number of deliveries per intern and the one on the length of time each intern spent on the obstetric service were made on the assumption that every intern took the obstetric service. Undoubtedly they did not, so these are minimum figures and the averages both of the length of each intern's service and the number of cases per intern would be higher if the exact number of interns taking the obstetric service were known.

The number of deliveries which it would be possible for each intern to assist with, deliver, or at least observe, if all the cases could be equally apportioned among all interns and if all interns took the obstetric service, was calculated for each hospital. There were 181 hospitals with rotating internships that gave the necessary information. Of these, there were only 21 hospitals in which there were less than 25 deliveries per intern; in 28 hospitals there were 25 to 49 deliveries per intern; in 68 hospitals there were 50 to 99, and in 64 hospitals the number was 100 or more, being 200 or more in ten of them. The minimum average number of deliveries per intern in any hospital was 9; the maximum was 309. The average of 9 per intern was in a hospital that gave a one-month service in obstetrics and had

TABLE IV. CASES OF COMPLICATIONS OF LABOR IN HOSPITALS

COMPLICATIONS OF LABOR	NUMBER OF CASES, MAXIMUM, MINIMUM, AND AVERAGE IN HOSPITALS GROUPED ACCORDING TO NUMBER OF DELIVERIES			
	GROUP I. HOSPITALS HAVING LESS THAN 300 DELIVERIES	GROUP II. HOSPITALS HAVING 300 TO 599 DELIVERIES	GROUP III. HOSPITALS HAVING 600 TO 999 DELIVERIES	GROUP IV. HOSPITALS HAVING 1000 TO 2000 DELIVERIES
Hyperemesis:				
Number of hospitals reporting on this item	45	80	33	23
Number of hospitals reporting no cases	5	7	4	–
Minimum number of cases in any hospital	1	1	1	2
Maximum number of cases in any hospital	25	20	115	40
Average per hospital	4.5	5.5	10.5	15.2
Eclampsia:				
Number of hospitals reporting on this item	50	97	37	25
Number of hospitals reporting no cases	4	4	–	–
Minimum number of cases in any hospital	1	1	1	1
Maximum number of cases in any hospital	17	26	15	42
Average per hospital	4	4.4	5.2	11.6
Other Toxemias:				
Number of hospitals reporting on this item	44	80	35	24
Number of hospitals reporting no cases	11	6	2	–
Minimum number of cases in any hospital	1	1	1	1
Maximum number of cases in any hospital	14	129	81	194
Average per hospital	13	10.1	13.2	36.3
Placenta Previa:				
Number of hospitals reporting on this item	47	90	40	25
Number of hospitals reporting no cases	2	8	1	–
Minimum number of cases in any hospital	1	1	1	2
Maximum number of cases in any hospital	8	12	32	36
Average per hospital	2.7	2.7	5	8.1
Ablatio Placentae:				
Number of hospitals reporting on this item	31	61	25	22
Number of hospitals reporting no cases	22	28	9	1
Minimum number of cases in any hospital	1	1	1	1
Maximum number of cases in any hospital	2	5	7	35
Average number of cases per hospital	0.4	1	1.9	7.1

TABLE IV—CONT'D

COMPLICATIONS OF LABOR	NUMBER OF CASES, MAXIMUM, MINIMUM, AND AVERAGE IN HOSPITALS GROUPED ACCORDING TO NUMBER OF DELIVERIES			
	GROUP I. HOSPITALS HAVING LESS THAN 300 DELIVERIES	GROUP II. HOSPITALS HAVING 300 TO 599 DELIVERIES	GROUP III. HOSPITALS HAVING 600 TO 999 DELIVERIES	GROUP IV. HOSPITALS HAVING 1000 TO 2000 DELIVERIES
Postoperative Hemorrhage:				
Number of hospitals reporting on this item	40	75	35	22
Number of hospitals reporting no cases	8	9	6	1
Minimum number of cases in any hospital	1	1	1	1
Maximum number of cases in any hospital	18	21	22	50
Average number of cases per hospital	2.7	3.4	3.9	14.0
Uterine Rupture:				
Number of hospitals reporting on this item	33	61	28	23
Number of hospitals reporting no cases	25	47	16	10
Minimum number of cases in any hospital	1	1	1	1
Maximum number of cases in any hospital	1	3	3	15
Average number of cases per hospital	2.4	0.3	0.7	1.4
Contracted Pelves:				
Number of hospitals reporting on this item	35	76	29	19
Number of hospitals reporting no cases	5	15	2	–
Minimum number of cases in any hospital	1	1	1	5
Maximum number of cases in any hospital	33	42	80	429
Average number of cases per hospital	6	5	11.1	75.5
Abortions:				
Number of hospitals reporting on this item	36	65	26	17
Number of hospitals reporting no cases	–	2	–	–
Minimum number of cases in any hospital	1	1	2	15
Maximum number of cases in any hospital	97	141	169	840
Average number of cases per hospital	32.6	47	84.1	139.4

TABLE IV—CONT'D

COMPLICATIONS OF LABOR	NUMBER OF CASES, MAXIMUM, MINIMUM, AND AVERAGE IN HOSPITALS GROUPED ACCORDING TO NUMBER OF DELIVERIES			
	GROUP I. HOSPITALS HAVING LESS THAN 300 DELIVERIES	GROUP II. HOSPITALS HAVING 300 TO 599 DELIVERIES	GROUP III. HOSPITALS HAVING 600 TO 999 DELIVERIES	GROUP IV. HOSPITALS HAVING 1000 TO 2000 DELIVERIES
Puerperal Infections:				
Number of hospitals reporting on this item	24	45	19	14
Number of hospitals reporting no cases	9	14	4	2
Minimum number of cases in any hospital	1	1	1	2
Maximum number of cases in any hospital	42	130	91	221
Average number of cases per hospital	4.6	7.5	7.7	32.6
Ectopic Gestation:				
Number of hospitals reporting on this item	42	87	33	22
Number of hospitals reporting no cases	6	4	2	2
Minimum number of cases in any hospital	1	1	1	2
Maximum number of cases in any hospital	13	24	31	61
Average number of cases per hospital	3.5	5.4	9.9	14.8

41 interns. It is more than likely that all the interns did not take the obstetric service so that the actual average would be higher than 9. The average of 309 deliveries per intern was in a hospital that gave a four-months' service in obstetrics and gynecology combined and had only four interns on the staff.

These figures show that in most hospitals there are enough obstetric cases available for each intern to receive adequate experience in the conduct of normal labor provided he is given an opportunity to observe, assist at, and conduct deliveries under competent direction. His judgment and skill at the end of his internship will depend largely upon the efficiency of this direction.

Complications of Labor.—Eleven complications of labor were listed on the questionnaire and each hospital asked to report the number of such cases it had during the year. The number of hospitals giving data on the various complications, the minimum and maximum number of cases reported by any hospital and the average are shown in Table IV. In considering the figures, the number of hospitals reporting on each item and the relation of this number to the total number of hospitals in the group as shown in Table III should be kept in mind.

It is quite probable that some of the hospitals that made no report on the number of cases of certain complications of labor had no cases

of that type, but of course this could not be taken for granted and only the hospitals that made a definite report were counted in the tabulation.

While the maximum number of cases of the specified complications of labor in any hospital is high in many instances, this maximum is frequently far above the number reported by any other hospital in the group. It will be observed that the minimum figure in most cases is one. Usually there were several hospitals that had this minimum number of cases and several more with only 2, 3, or 4 cases.

From the number of hospitals reporting that they had no cases of certain types of complications, the small average number of cases per hospital for many complications, and the average length of the

TABLE V. OPERATIVE DELIVERIES IN HOSPITALS

OPERATIVE DELIVERIES	NUMBER OF CASES, MAXIMUM, MINIMUM, AND AVERAGE NUMBER, AND HIGHEST AND LOWEST PERCENTAGE IN HOSPITALS GROUPED ACCORDING TO NUMBER OF DELIVERIES			
	GROUP I. HOSPITALS HAVING LESS THAN 300 DELIVERIES	GROUP II. HOSPITALS HAVING 300 TO 599 DELIVERIES	GROUP III. HOSPITALS HAVING 600 TO 999 DELIVERIES	GROUP IV. HOSPITALS HAVING 1000 TO 2000 DELIVERIES
Forceps Deliveries:				
Number of hospitals reporting on this item	45	93	41	26
Number of hospitals reporting no cases	–	–	–	–
Minimum number of cases in any hospital	1	5	16	17
Lowest percentage of deliveries by forceps in any hospital	0.5	1.4	2.5	1.2
Maximum number of cases in any hospital	101	268	760	465
Highest percentage of deliveries by forceps in any hospital	64.7	73.3	62.3	38.8
Average number of cases per hospital	37.5	71.7	145.4	215.3
Versions:				
Number of hospitals reporting on this item	46	92	40	26
Number of hospitals reporting no cases	3	2	–	–
Minimum number of cases in any hospital	2	1	2	4
Lowest percentage of deliveries by version in any hospital	0.7	0.2	0.3	0.4
Maximum number of cases in any hospital	168	74	248	571
Highest percentage of deliveries by version in any hospital	56.7	14.8	28.6	28.5
Average number of cases per hospital	9.8	11.1	24.7	39.2

TABLE V—CONT'D

OPERATIVE DELIVERIES	NUMBER OF CASES, MAXIMUM, MINIMUM, AND AVERAGE NUMBER, AND HIGHEST AND LOWEST PERCENTAGE IN HOSPITALS GROUPED ACCORDING TO NUMBER OF DELIVERIES			
	GROUP I. HOSPITALS HAVING LESS THAN 300 DELIVERIES	GROUP II. HOSPITALS HAVING 300 TO 599 DELIVERIES	GROUP III. HOSPITALS HAVING 600 TO 999 DELIVERIES	GROUP IV. HOSPITALS HAVING 1000 TO 2000 DELIVERIES
Classic Cesarean Sections:				
Number of hospitals reporting on this item	47	97	43	27
Number of hospitals reporting no cases	4	3	–	–
Minimum number of cases in any hospital	1	1	2	1
Lowest percentage of deliveries by classic cesarean section in any hospital	0.5	0.2	0.2	0.1
Maximum number of cases in any hospital	21	51	61	183
Highest percentage of deliveries by classic cesarean section in any hospital	10.4	9.8	7.3	14.1
Average number of cases per hospital	5.2	9.2	18.3	24.0
Cervical Cesarean Sections:				
Number of hospitals reporting on this item	26	47	17	17
Number of hospitals reporting no cases	22	31	7	4
Minimum number of cases in any hospital	1	1	1	2
Lowest percentage of deliveries by cervical cesarean section in any hospital	0.4	0.2	0.1	0.1
Maximum number of cases in any hospital	8	15	48	66
Highest percentage of deliveries by cervical cesarean section in any hospital	4.0	2.7	5.1	5.0
Average number of cases per hospital	0.5	1.8	7.4	16.3

obstetric service in a rotating internship, it is obvious that most interns will see but few of the complications of labor with the exception of the more common types such as abortion, puerperal infection, and toxemia, and will receive still less experience in the management of such cases. This is borne out by the replies received from recent graduates (Table II).

Fifty-nine hospitals made a report on each one of the eleven complications of labor listed on the questionnaire. Only 7 of them had cases of all eleven types of complications during the year, and a few more had cases of all types except uterine rupture. From this it may be concluded that in but few hospitals will an intern have an opportunity to see all these types of complications of labor even during a

year's internship in obstetrics, and during a rotating internship the opportunity for such experience is largely a matter of chance.

The small averages per hospitals of some of the complications of labor are causes for congratulation. One of the objectives of improved obstetric practice is a further reduction in all of them. In the ordinary course of events each general practitioner will have but few cases of the less frequent complications of labor in his years of practice. The question is how to give him training and experience to enable him to recognize these cases early and to manage them successfully.

The value of using demonstration material to supplement lectures on complications of pregnancy while the student is in the medical school is obvious. In hospitals giving the fifth or intern year of medicine, there should be better organization for teaching, which should include more or less formal instruction by means of conferences, manikin work, moving pictures, charts and slides. Interns expecting to include obstetrics in their practice should be given a major service in this branch. Others need only the minimum. Complicated cases in hospitals should be called to the attention of all interested interns.

There are more than 3500 general hospitals in the United States which are registered by the American Medical Association but not approved for general rotating internships. A number of these have 150 to 400 or more births annually. The possibility of developing special internships of three months or more in the obstetric departments of these hospitals suggests itself as a means of giving additional experience to those interns who wish to include obstetrics in their practice and who receive only a limited amount of obstetric training during their rotating internships. Such services would need to be under the direction of a competent obstetrician.

Operative Deliveries.—There is no dearth of operative deliveries in hospitals and the intern who does not have an opportunity to see a large number of forceps deliveries, at least, will be the exception rather than the rule. The danger seems to be that operative deliveries will be overemphasized in the intern's training and that he will fail to appreciate the importance of conservative obstetrics. A proportion of one-fourth, one-third, or one-half of the deliveries by operative procedures was not uncommon. In one hospital with 867 deliveries, 644 or 74.3 per cent had been by forceps, version, or cesarean section. This hospital is on the list of hospitals approved for internships and had six interns.

Two hundred and five hospitals reported on the number of forceps deliveries: 204, the number of versions, 214, the number of classic cesarean sections, and 107, the number of cervical cesarean sections. Only 27 hospitals in the entire number reported having less than 20 forceps deliveries during the year. Five hospitals reported no deliv-

eries by version, 7 none by classic cesarean section, and 63, none by cervical cesarean section. The minimum and maximum number, the lowest and highest percentage in any hospital, and the average per hospital are shown in Table V.

COMMENTS OF THE COMMITTEE

Instruction in obstetrics to medical students is a desideratum of prime importance in the determination of maternal morbidity and mortality. The better the clinical training of students in the art of obstetrics the better obstetrics they will practice and this, in turn, will be reflected in improved results. Didactic teaching of obstetrics, in the United States, is and has been fairly satisfactory, save that it has been overstressed in many schools for want of clinical material. The need is not for less theory but for more clinical instruction. Our maternal mortality rate exceeds that of any and all continental countries; it exceeds that of Canada and some of the Republics of South America, in short it is the highest of the civilized world. We could go far in correcting this disgraceful state of affairs if our teaching institutions would provide adequate facilities for clinical instruction in obstetrics. The American Medical Association estimates that there are 700,000 women delivered in hospitals annually. This would indicate a wealth of clinical material not available for teaching purposes. The need is for *more maternity beds* and for more patients available for teaching. To fulfill this want the administrative bodies must manifest greater zeal in providing needed facilities. They cannot expect the public to take the initiative in developing maternity hospitals. There is evidence on every hand that such sentiment is being created in administrative circles. In recent years a limited number of excellent maternity hospitals have been erected in conjunction with teaching institutions and in most schools there have been added hours allotted to the teaching of clinical obstetrics. The American Gynecological Society, the American Association of Obstetrics, Gynecology and Abdominal Surgery, the Section of Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association are uniting in making overtures to the Council of Medical Education for a larger recognition of obstetrics in the curricula of our medical schools. As yet they have not received satisfactory consideration from the council. These same organizations have recently inaugurated "The American Board of Obstetrics and Gynecology" for the purpose of raising the standard of obstetric and gynecologic practice in America. Much has been accomplished—more is urgently demanded if obstetrics is to receive recognition on a parity with medicine and surgery. We urge upon the administrative faculties of our educational institutions that obstetrics receive equal recognition with general surgery. Such is its

relative importance in the general practice of medicine and such should be its place in the medical curriculum.

There is much in the findings of the Committee on Undergraduate Teaching of Obstetrics to lend encouragement. We note with satisfaction that the departments of obstetrics and gynecology are combined in about half of the schools answering our questionnaires and that approximately 80 per cent of the Deans of medical schools favor the combined chair. It would seem that in the near future our medical schools will be fully committed to this logical and desirable arrangement. It is effective for didactic and administrative purposes and will result in a greater appreciation of the importance of combining the two specialties in practice.

It is gratifying to note that almost without exception the Heads of Departments are practitioners in their special field. This should insure greater emphasis on clinical teaching.

The correlation of the teaching of the basic sciences with the teaching of obstetrics and gynecology is a difficult problem. It is not satisfactorily solved in most of our medical schools. This important problem should receive the consideration to which it is entitled. The application of the basic sciences to obstetrics can only be satisfactorily taught by a qualified obstetrician.

The committee would emphasize the importance of a resident maternity service for undergraduates and graduates. A well-ordered maternity service with sufficient clinical material is the *sina qua non* of the clinical teaching of obstetrics. There is no adequate substitute. The ideal would be a detached maternity hospital in close proximity to the university hospital and under university control. Only a very limited number of our schools can boast of such equipment.

It is contended by some that with a well-ordered dispensary, where prenatal and postpartum observations may be followed up, a dispensary as an organic part of a maternity hospital, there would be no need to adhere to the long-established custom of sending students into the home for deliveries and postpartum supervision. This plan does not meet with the approval of all members of the committee. However, the lack of adequate dispensary and maternity hospital facilities is no justification for the continuance of an outdoor student service when it implies that untrained students, ignorant of the rudiments of clinical obstetrics, are permitted to deliver patients in the home, unattended by an experienced obstetric teacher. If the school cannot provide a maternity service for their students, then it would be better for their clinical training in obstetrics to be deferred to their intern service. To send a student into the homes of the poor, unattended by a competent clinician, is a menace to the public and a travesty on pedagogy. There are a number of medical schools without a maternity hospital and located in small communities where any

considerable out-patient service is impossible. Such schools might well require a hospital year before granting an M.D. degree and in this hospital year a maternity service would be required. It is questionable if there is any more justification for requiring of the student body the responsibilities in obstetric practice than that they perform a given number of surgical operations. Let us speed the day when dispensaries and maternity hospitals will supply all needed clinical material.

It is the opinion of the committee that instruction should be given to the student body in contraceptive methods and the therapeutic indications thereof. Moreover, it is the opinion of the committee that the students should be given special instruction in the management of abortions.

If there is one universal complaint expressed by the Heads of Departments it is the need of sufficient clinical material for teaching purposes. It is surprising to note that with all this need there is not made more general use of charts, slides, movies, and specimens. Even the manikin courses are too often curtailed or not given at all. Such useful adjuncts to teaching would go far in compensating for the lack of clinical material.

Finally we would stress the importance of prenatal and postpartum clinics. Nearly all Heads of Departments lay claim to such clinics but it is apparent from reports at hand that, with few exceptions, these clinics have not been developed to the extent justified by their importance. Maternal morbidity and mortality could be more than halved by efficient prenatal, intranatal and postpartum supervision. The students should not be denied the opportunity to acquire this much-needed training. The responsibilities of the obstetrician begin from the date of conception and are not at an end until mother and child are made whole and sound.

Preventive medicine has worked wonders in reducing the mortality rate in internal diseases. There is need for similar activity in the field of obstetrics. The development of more and still more teaching maternity hospitals for the better training of medical students, nurses, and midwives in the art of obstetrics, and the intelligent cooperation of the lay public and profession in the care of the expectant mother will do for obstetrics what preventive medicine has done in the general field of medicine.

Happily, we are experiencing an awakening of interest in the preventive phase of obstetrics. We find the leaders in the field of obstetrics stressing the need of vigilant prenatal care. It is this preventive phase of activity that gives promise of placing obstetrics more nearly alongside of medicine and surgery in the onward progress of our science.

The maternal and fetal death rates are partly attributable to the lack of prenatal and other maternity supervision and with no desire to absolve the physician from his responsibilities in prenatal supervision we are of the opinion that the blame rests in part upon the women themselves. Through various campaigns of education conducted by numerous agencies they have had opportunity to know of its importance, yet they are too often indifferent and neglectful. And so the expectant mother disregards instruction, unmindful of the pitfalls that await her. Not until women appreciate the serious aspects of childbirth will they demand that expert guidance which the specialty requires.

We are told that the mortality rate is higher in the cities than in the rural districts; that it is appallingly high among the colored race and that the sparsely settled districts, where facilities are meager or altogether wanting and doctors are few, are suffering by comparison with more thickly populated districts. We are told on competent authority that puerperal sepsis ends fatally in 50 per cent more cases in the cities than in rural districts where surgical interference is less in vogue.[1] Frederick Rice finds the average maternal mortality rate from sepsis in cities to be three per thousand live births and in rural districts 1.9 per thousand live births.[2] These are thought-provoking statements which should come to us as a challenge. More than half, if not three-fourths, of maternal fatalities, are preventable. Are we to lag behind in the onward march of preventive medicine? The awakening of general interest in prenatal care, the masterly leadership of men and institutions as evidenced here and there and the organized efforts to ascertain facts by such organizations as the White House Conference on Child Health and Protection afford abundant evidence that the time is not far distant when we will make a better accounting of our stewardship.

Our high maternal mortality is not the only urge for better undergraduate teaching of obstetrics. We are confronted with the problem of early infant mortality and stillbirths which are likewise chargeable, in no small degree, to the lack of adequate clinical instruction in obstetrics. The reports of the U. S. Bureau of the Census for 1925-29 inclusive, show a mortality in the first day of infant life of 15.0 in 1925 as compared with 15.3 in 1929; in the first week of infant life of 28.0 in 1925 as compared with 28.1 in 1929 and in the first month of infant life of 37.8 in 1925 as compared with 36.9 in 1929. The rates are for the expanding birth registration area and are made on a basis of 1,000 live births. We observe that not only is the early infant mortality excessive but that there has been no improvement in the years 1925-29. The record of stillbirths, from the same source for

[1]Miller, Jeff: South. M. J. 19: 882, 1926.
[2]New York State M. J. 29: 262, 1929.

the years 1925-28 inclusive, per 1,000 live births, shows an incidence of 36 stillbirths in 1924 as compared with 35 in 1928 in the white population and of 76 in 1924 as compared with 81 in 1928 in the colored population.

With all the restrictions placed on medical practice we still find obstetrics the one specialty of medicine in which nongraduates are permitted to practice. While progress has been impeded by the attitude assumed by the medical profession and laity alike in regarding childbirth as a physiologic process, we have even more grievously erred in the assumption that childbirth is a pathologic process. The latter view has led to unwarranted and meddlesome interference and is responsible in no small degree for our deplorable results. The only reasonable and sane position to assume is to regard childbirth, not as an event so natural and devoid of danger as to be regarded with indifference, nor yet so abnormal, as to place it in the category of a surgical specialty. Rather should it be regarded as a process of such intrinsic importance as to call for unceasing vigilance, for masterly inactivity matched with timely thought-controlled interference.

While this report has to do with the undergraduate teaching of medical students we are not unmindful of the need for larger and better clinical facilities for the instruction of graduate medical students, nurses, and midwives. All must share in the benefits of augmented clinical facilities if we are to make any notable improvement in our results.

RECOMMENDATIONS OF THE COMMITTEE

1. Unification of the departments of obstetrics and gynecology in medical schools and in all hospitals affiliated with and controlled by the university.

2. All members of the teaching staff should be qualified obstetricians and gynecologists.

3. The extension of special pathology laboratory courses, manikin demonstrations and clinical clerkships.

4. More liberal use of charts, models, specimens, lantern slides, and movies.

5. Better correlation of the teaching of the basic sciences with the teaching of obstetrics and gynecology.

6. A rotating internship of one year, embracing a satisfactory maternity service, should be required for the licensure for the practice of medicine. It is recommended that an effort be made in all states to secure such legislation.

7. There should be larger opportunities for witnessing complicated cases.

8. The reasonable number of cases for students to participate in delivery under adequate supervision is not less than 25.

9. All student deliveries in the home should be supervised by a teaching obstetrician. Instruction to the students to call for help "when needed" is not adequate supervision.

10. The bloc system for teaching clinical obstetrics.

11. The development of larger and better prenatal and postpartum clinics.

12. More liberal allotment of teaching hours in clinical obstetrics. Teaching hours and facilities should be on a parity with general surgery.

13. Adequate facilities for clinical instruction in obstetrics and detailed instruction in preconceptional, prenatal, intranatal, and postnatal care, preferably in an isolated maternity building, in close proximity to the university hospital and under university control.

14. The development of plans whereby more of the obstetric cases in hospitals not now used for teaching may be made available for that purpose.

15. The committee indorses the recommendation of the American Association of Medical Colleges that 5 per cent of the total hours required for graduation and degree be devoted to instruction in obstetrics.

16. There is need for the general adoption of a comparable form in the catalogues of medical schools which will obviate confusion and insure greater accuracy and completeness.

GRADUATE EDUCATION OF PHYSICIANS IN OBSTETRICS*

By Rudolph W. Holmes, M.D., Chicago, Ill.

THERE is a very intimate relationship between the type of undergraduate and graduate teaching in obstetrics. If the student has been poorly educated in his undergraduate years he does not present the malleability requisite for the making of a finished scholar in graduate work. Both must be of high order if productive results are to be assured.

There were but two or three places in the United States at the beginning of this century where the ambitious young graduate could go for postgraduate courses in obstetrics—of a sort. If he wished to secure ample opportunity he needs must have traveled to Europe. The survey made by the Committee on Obstetric Education of Physicians demonstrates that to this day the opportunities for a man wishing to obtain advanced work in obstetrics in this country are not sufficient.

There is still a serious problem facing us in the attempt to formulate rules for a minimal standard of undergraduate teaching—the number of hours of didactic work, demonstrations, and comprehensive clinical instruction, so that there will be a balanced correlation between the component divisions of the departmental teaching, as well as a correlation between the elements of all departments, one to another. It would be productive of more ideal results if all the Class A medical schools would devise such a productive system that comparable values would be placed on their diplomas: coercion by the 48 varieties of legislative action robs the schools of their initiative and the opportunity of having a common standard. In the same manner the colleges which are offering graduate courses should devise rules for the determination of what constitutes minimal standards for the different types of graduate teaching.

* * * *

CLASSIFICATION OF GRADUATE TEACHING

There are various methods followed in giving advanced instruction to physicians, all of which serve a most valued and useful purpose, but each one has an ultimate end, widely divergent one from another. Some are merely short courses which inspire the students to higher aims and ideals and are preeminently practical in intent. Others give a most comprehensive survey of the whole field of medicine. Others

*Report of Section a, Subcommittee I, on Obstetric Teaching and Education of Physicians, Nurses, Midwives, Social Workers, and Laity.

may be limited in scope with the intent of producing specialists in specific medical fields, teachers, or investigators. A course which purports to prepare a man for advanced standing as a clinician and teacher of obstetrics should have some survey of all medical specialties which are connated directly or indirectly to obstetric practice. A physician may practice dermatology, ophthalmology, urology, laryngology, etc., even general medicine and surgery with a meager knowledge, practical or theoretical, of obstetrics: such specialists will have slight contact with the childbearing conditions. On the other hand, the obstetrician constantly comes in contact with each and every complication which peculiarly is germane to some individual specialty.

There has been much misconception, and therefore confusion, by indiscriminate use of terms applied to advanced medical teaching. The Committee on Medical Education and Pedagogics of the Association of American Medical Colleges has presented definitions which fairly adequately cover our needs. These are as follows:

Postgraduate Medical Study.—Postgraduate medical study is that ordinarily done under other than University direction in medical subjects by graduates in medicine. If under University direction, it is usually in the Extension Division. Its methods are varied, but much of it is done through hearing lectures and witnessing demonstrations. Its chief characteristic is further training in the practice of medicine. Research is not a factor. The course is usually brief—from one week to six months—but may extend to one year. University degrees may be granted, or proper diplomas or certificates may be obtained. (The term postgraduate is not desirable, but it is so well fixed by usage both in America and Europe that there seems no probability of displacing it.)

Graduate Medical Study.—Graduate medical study is special medical study in a university in selected public health, medical science, or clinical subjects. It is under the direction of the school of public hygiene, or school of public health, or the general graduate school, or the graduate medical school, or the graduate department of the medical school. One academic year devoted to the study of a single (convention) medical subject is the minimal matriculation period, and constitutes credit toward a graduate university degree, maturing within a minimum of two academic years for a master's degree, and within a minimum of three such years for a doctorate degree.

These definitions are accepted as valuable descriptive outlines for courses, and their application limited to obstetric teaching in this report. Wherever "obstetric teaching" is used it includes so-called gynecology as an integral part of such obstetric pedagogy. From the anatomic, embryonic, physiologic, and pathologic standpoint they are one and indivisible. From a clinical point they should be completely unified.

The Committee on Obstetric Education of Physicians has endeavored, by means of questionnaire studies, research and correspondence to secure data, as nearly complete as possible, on the postgraduate and graduate teaching in obstetrics, which is being done in the United States. The following is a summary of its findings.

POSTGRADUATE TEACHING

For purposes of this report postgraduate teaching in obstetrics may be separated into the following groups:

1. Extension Courses: under the auspices of a University Medical School, or Medical Society, or State Board of Health.

2. Courses given by Medical Societies, or other organizations. Commonly, a well-balanced, comprehensive program is provided in which obstetrics is but a part.

3. Residencies in obstetrics and gynecology in a hospital.

4. Brief Intramural (University Control) Courses in Obstetrics, possibly with some instruction in subjects germane to obstetrics.

It is recognized that any of the above types of teaching may be designed to form part of a graduate course. This is particularly true of a residency which is frequently the first year of a graduate course. At the present time, however, with the exception of residencies, practically none of the work in the above classifications is graduate work.

EXTENSION COURSES IN OBSTETRICS

A survey made by the committee indicates that there have been more or less active endeavors to give some extension courses in obstetrics in ten states, California, Florida, Georgia, Iowa, Kansas, Kentucky, Maryland, New York, Oklahoma, and Wisconsin. This work usually has been under the auspices of the Medical School and the Extension Division of the State University of the State Board of Health, in cooperation with State and local medical societies. Briefly the details of the work and the opinions concerning it are as follows:

In Maryland and New York, series of 5 lectures have been given in a few communities without a definite class formation. In Maryland the work has been done by members of the University of Maryland, aided by financial subsidies from the Bureau of Child Hygiene of the Department of Health. The instructors receive no additional compensation for this extramural work. In New York, 17 lecture courses, of 5 periods each, covered 27 counties during the period from April, 1926, to May, 1929. These courses were conducted by the Division of Maternity, Infancy, and Child Hygiene of the State Department of Health, cooperating with the Committee on Public Health and Medical Education of the State Medical Society. They were financed by State and Federal appropriations made available under the Federal Maternity and Infancy Act. The Committee on Public Health and Medical Education of the New York State Medical Society felt that these courses are so valuable that they have made arrangements to give a six-lecture course in obstetrics to local groups. There was no cost to the physicians who attended the lectures in either state.

Wisconsin, through the activities of the Extension Division of the State University, has been giving extension courses in medicine, though the work to date in obstetrics has been limited to one-lecture courses in the several communities. This activity is supplemented by a traveling library, whereby physicians, at a minimal cost, may borrow obstetric and gynecologic textbooks as well as works on general medicine. There is a tentative plan for a more extended course next year.

The California and Kentucky work has consisted of one or two lectures to each community group. In Kentucky the necessary equipment for demonstrations was provided.

In five states, namely, Florida, Georgia, Iowa, Kansas, and Oklahoma, classes have been organized and formal courses given. The first course was given in Georgia, 1929. Florida now has a course in progress (January, 1931). The courses in both states were under the auspices of the State Board of Health and State Medical Society. They were given by a member of the faculty of the Medical School of Emory University who is a part-time member of the staff of the Federal Children's Bureau: the latter financed the activity. Classes were organized in various communities throughout the state, no community that desired the work being considered too small to make the lessons a success. The lecturer spent a week in each community, giving a course of five lectures, supplemented by slides, moving pictures, and manikin demonstrations. No fees were required from the physicians attending, as the cost of the work was borne by a Federal Government agency.

In Iowa, Kansas, and Oklahoma, the courses were sponsored by the Extension Divisions of the State Universities in conjunction with the Medical Schools. Class groups were organized by the Extension Division in five or six strategic centers within driving distance of each other, and located approximately in a circle. The towns in which the courses were to be given were selected on account of their availability to physicians located in contiguous communities. Lectures and clinics or demonstrations were given once a week in each center for nine or ten weeks. The courses were practically self-supporting, being financed by the fees paid by the enrolled physicians. The organization costs, which were small, were defrayed by the Extension Division of the State University.

The consensus of opinion was that the extension plan, the so-called circuit courses, offers ideal means for the improvement of obstetric practice. Too, this is the most economical method of bringing practical knowledge to physicians that has yet been devised, both from the standpoint of the organization conducting the course as well as the expense which the physician must bear. It is a serious matter to take a physician away from practice for a period with the economic losses, and the augmented expenses while away from the center of his activities. The influence for good is self-evident as the teacher sees and has intimate contact with some five or six groups of physicians each week. The great advantage of this method of instruction is that the subject matter is brought to the physicians as a home problem, in their home community, whereas, if they go to the medical centers they get the instruction from the environment and equipment of the University, tinctured by the University method of conducting affairs. Letters received from the instructors and others participating in the organization of the circuit course extol the advantages of the method; in every way obstetrics may be taught with brilliant success; also, it was the consensus of opinion that the plan offers the best means of improving the general practice of obstetrics. More physicians may be reached in a shorter period of time than by any other means, and with a minimal cost to the participants. One instructor is able to meet six groups of physicians each week. In North Carolina, courses in pediatrics were given in 24 centers in one summer, demonstrating the

possibility of covering an entire state in this period of time. The possibility, and the desirability, of doing the same with obstetrics is self-evident.

One point particularly emphasized by those replying to the questionnaire was the importance of exercising great care in the selection of instructors, as the success of the course is largely dependent upon the instructor's ability "to put it over." This again accentuates the fact that avid interest and enthusiasm for one's task are worth more than mere equipment. It was pointed out that the experience of one state had shown that it took two or three good courses to counteract the effects of one given by a poor instructor. In this connection, the dearth of suitable instructors received animadvertence: the need was stressed by a central agency which would furnish lists of competent persons from which selections could be made. It naturally follows that the instructor must be a man so situated that he can give the allotted time to the work with a minimal of sacrifice on his part. University teachers are peculiarly appropriately placed for the duties; physicians in private practice, even though they be teachers, hardly may avail themselves of the opportunity to do this good work on account of the loss of private practice. The work was so invaluable, it was felt, by those interested in the activity, that teachers who were altruistically interested in the advancement of obstetric practice would willingly make the sacrifice by giving at least one course, even though the remuneration were not large.

Practically all were agreed that physicians not in private practice within the state should be secured. There were a number of outstanding reasons for this: (1) It avoided any criticism that the State University, or other agency promoting the course, was fostering any individual physician's private practice. (2) It did not arouse fear on the part of the physicians taking the course that the instructor was trying to build up a clientele for himself from the prestige incident to giving the course. (3) A physician from a distance may be freer in expressing views than one who lives near enough to be called in consultation by local physicians or patients. Based upon the above thoughts, the instructors usually have been prominent obstetricians and teachers from outside the state, or when they were residents of the state they came from the faculty of the State University Medical School. The latter received no additional remuneration for conducting the course, though expenses were paid: the former received a salary ranging from $200.00 to $250.00 weekly, with expenses. An automobile was provided if required.

Opinion varied as to how many physicians should be in each group. One instructor stated it graphically when he expressed the opinion that the group should be large enough to be stimulating, and small enough to avoid confusion and interruption. However, relatively

small groups permit a more intimate contact between physicians and instructors. At least 100 physicians should be on a circuit to make the courses self-sustaining. The classes have been held in hotels, schools, or hospitals. The latter is the most satisfactory if clinical material is to be supplied.

The fees have been moderate, ranging from $10.00 to $35.00 for the course: such fees are adequate to cover the cost of the complete circuit. The opinion was expressed by one man that the course should not be free, "for one usually tried to get something out of a thing when he invested money in it."

The success of postgraduate instruction by means of extension courses is shown by the demand for additional courses in the states where the work was initiated. It was stated that there were few instances in which, after attending one course, the individual physicians failed to register for a succeeding one. The merits of this plan of instruction are further evidenced by the fact that at the last meeting of the National University Extension Association a special committee on graduate extension work in medicine was appointed. The aim of the committee is to bring about some national cooperation in the method. It is essential that such a body shall carry on the activities in order that this most invaluable means of educational propaganda and planning may promote similar campaigns in states which have not yet assumed the responsibility.

The following topics have been discussed in the courses though no single one included them all.

Contraceptive advice and sterilization
History taking, examination, and instruction of patient
Management of normal pregnancy
Minor ailments
Toxemias: Hyperemesis
Eclampsia
Normal labor and puerperium, management
Normal labor
Puerperal infection
Complications of pregnancy
Forceps delivery
Breech extraction and version
Anesthesia
Use of pituitrin
Asphyxia neonatorum
Malposition
Multiple pregnancy
Hemorrhages: Abortion
Ectopic pregnancy
Placenta previa and premature detachment of the placenta
Postpartum hemorrhage
Prolapsed cord
Difficult labor
Management of slight disproportion
Injuries to the birth canal
Repair of birth injuries
Episiotomy
Blood transfusion
Cesarean section
Other operations

COURSES GIVEN BY MEDICAL SOCIETIES OR OTHER ORGANIZATIONS

The Committee did not go into the question of courses given by groups which appropriately come within this category, other than the extension (circuit) courses outlined in the previous section. So far

as is known no attempt has been made to give such courses in obstetrics alone. Certain medical groups have given most excellent opportunities for physicians to refresh themselves in general medicine, and including most, if not all, the specialties. These groups endeavor to supply a well-balanced program which will be instructive to general practitioners. A very outstanding plan is that employed by the Kansas City Southwest Clinical Society which gives a program continuing four or five days in the early Fall of each year. The program is a thoughtfully prepared presentation of important topics covering the principal fields of medicine by means of addresses on vital topics of the day by representative authorities, by lectures, and clinical demonstrations. The scope of their activities may be appreciated when it is stated that some 72 lectures were presented, and an endless array of clinics given at their meeting last October. Obstetrics was one of the most important specialties given attention. Seventeen hours were devoted to obstetric discussions, besides many clinical sessions being held. The obstetric classes were so popular that some two or three times the number of physicians who could be accommodated applied for tickets to the various classes. The fees were nominal, $6.00 for the complete course, or $1.00 for a single lecture. The scope of the conference was so comprehensive, and so perfectly arranged, that their method of postgraduate teaching is worthy of emulation by other medical societies.

Another example of this type of work is that of the Chicago Medical Society which, each summer, plans a two weeks' course on clinical medicine, covering all the specialties. Obstetric clinics are provided, and are supplemented by demonstrations given by the obstetric department of the University of Illinois. The enormous wealth of clinical material of the Cook County Hospital is available for this course.

The obstetric and gynecologic societies, both national and local, at their periodic meetings offer a wealth of instruction to those who are so located that they may attend them. It is a general rule of such organizations that visitors are always welcome to attend the sessions, and some make it a rule that such guests are invited to participate in discussions. The personal contacts as well as the benefit derived from listening to the presentation of papers and discussions are important adjuncts to postgraduate study.

The clinical material in strategic points over the country should be used for courses along the lines of the above two societies: these refresher courses could be made a great boon to physicians within easy reach of such centers of medical activity. It is regrettable that in too many places the clinical facilities are allowed to lie fallow in so far as they pertain to educational purposes.

RESIDENCIES IN OBSTETRICS AND GYNECOLOGY IN HOSPITALS

There are 83 hospitals on the list approved for residencies in specialties by the Council on Medical Education and Hospitals of the American Medical Association which give residencies in obstetrics or gynecology or both. The total number of residencies offered by these hospitals is 166; of which 7 are in gynecology alone, 28 in obstetrics alone, and 131 in obstetrics and gynecology combined. The number of residencies in these specialties in hospitals not on the approved list is not known. The committee appreciates the enormous benefit of this type of experience both to the community and to the doctor in completing his training and preparing him for a specialty. However, this training is more or less of an individual character and not part of an organized effort to promote postgraduate or graduate education in obstetrics, therefore no special study of the postgraduate work offered by means of residencies was made by the committee except in so far as the form part of a more extensive course (see section on Graduate Education).

BRIEF INTRAMURAL COURSES (UNIVERSITY CONTROL)

Questionnaires were sent by the committee to all Grade A Medical Schools in the United States requesting, in addition to general information concerning the department of obstetrics, data on the type of postgraduate and graduate courses given at each school. Forty-two sent replies; 26 of them reported postgraduate or graduate teaching. Each school was given a schedule number and in the summary this number is used instead of the school.

Questions concerning five types of teaching were listed on the questionnaires: refresher courses, courses for less than one year, courses for one year or longer, courses designed to train specialists, and courses designed to train teachers. In accordance with the definitions of the Committee on Medical Education and Pedagogics only courses of one year or longer given at, or under the direction of, a university would be classed as graduate study. Accordingly, for purposes of this report, refresher courses and courses for less than one year are discussed under the heading of "Postgraduate Education," and those for one year or longer, the training of specialists, and the preparation of teachers are discussed under "Graduate Education." It is difficult to apply any hard and fast rule. Strictly speaking, however, the committee is of the opinion that the distinguishing feature of graduate courses should be research.

REFRESHER COURSES

Eleven schools attested to the fact that they gave Refresher Courses. The educational requirements for admission are similar in that they

all demand that the applicants shall be graduates in medicine. The other conditions imposed do not relate to previous education.

The length of the course varied from one to eight weeks. The number of hours of instruction per week ranged from two to forty-eight. A better idea of the extent of the course may be adduced by giving the total hours of instruction for the schools that furnished figures. The time allotted for the course ran the gamut of eighteen to thirty-six hours for the shortest to two hundred and forty hours for the longest. Naturally, such a wide divergence of time may be ascribed to the varying purpose of the course, the material available, and the scope of the instruction. Any inculcation of knowledge and stimulus aroused which may incite the student to further study is beneficial: the value increases directly as the time and opportunity increase.

All but two of the schools reporting gave courses which included observation and practical work as well as theory. In nine schools the students had work in prenatal clinics and in eight they had work in postnatal clinics. The others either did not report or gave no work in prenatal and postnatal care.

In only three schools were the students permitted to conduct deliveries and in one of these it was elective. In another school they could observe, and one school did not report either way.

It would be desirable for students to have a more definite contact with patients in the pre- and postnatal clinic, and in the delivery room. It naturally follows that a clinic cannot permit, unless there be a most efficient and rigorous control, a student who comes for a few weeks' training to do much of the actual clinical activity: he may be entirely an unknown quantity. Clinical contacts are vitally essential.

Ten of the schools reported on the item of manikin courses; nine of them gave such a course. In five of them it was obligatory, in one it was elective, in two it was not obligatory, and one did not report either way.

The judicious use of the manikin, both as a means of demonstration and for the benefits which accrue to the student when he is required to perform personally all possible obstetric operations, is so important an adjunct to the best teaching of operative obstetrics that it must be most strenuously recommended.

Systematic laboratory work was required in five schools, elective in one, and advised in one. In three schools it was not required.

Ten schools replied to the question, "Are refresher courses useful?" All believed that they were. Three answers respectively were qualified as follows: "to some men," "chiefly as an inspiration to study," "they seem to be of value; of course, they are not to be taken seriously as of educational importance."

The committee feels that the refresher courses are of great value, especially if a part of the course be devoted to manikin demonstration and practice, and some routine laboratory instruction be given.

COURSES LASTING LESS THAN ONE YEAR

The questionnaire brought forth responses from 8 schools which gave protracted obstetric courses.

In 3 schools the course was of six months' duration, in one it was three months, in one it was two weeks and the remainder, 3, did not answer the query. The number of hours per week was stated by only two schools.

On the bare statement of the facts, it would seem a questionable course which has not been planned so that the students will get a maximum of opportunity to fill their time while in attendance upon the course. Such haphazard pedagogy surely must be a waste of time to all concerned. However, the response to the query, "Of what do such courses consist?" removes much of the sting to the critical comment as the assigned tasks provided amply opportunity to the earnest student. Five directors of the courses believed they served a useful purpose; three made no reply.

INTERN YEAR

For some years it has been felt that the clinical instruction during the third and fourth years of undergraduate study is insufficient to complete the student's contact with patients: that it is highly essential that the student shall live a year in the atmosphere of a hospital with all the advantages which will accrue from a rotating service. So, one medical school after the other made the fifth, or clinical year prerequisite for the degree of Doctor of Medicine. At the present time there are 12 medical schools which require five years, and in an additional one this requirement becomes effective in 1933. To conform to the college requirement, the commission on Licensure of the District of Columbia, and the "Licensing Boards" of Alaska, Delaware, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Dakota, Utah, Washington and Wisconsin have incorporated into their regulations that all candidates for licensure shall have had the clinical, intern year. The State of Oklahoma will enforce this requirement in about a year. In view of the progressive requirement in this direction the Committee has held that the "Intern Year" is an undergraduate period, not a graduate course. In most instances the rotating service of the hospital includes a few weeks of duty in the obstetric department, but in most hospitals such service hardly supplies adequate obstetric training.

GRADUATE TEACHING

Graduate teaching covers a longer period than postgraduate instruction. It connates with the idea that the course is more comprehensive and intensive than the latter. The implication is carried that the

instruction in the course is an approximation of the ideal in that research plays a very important part, and the clinical, practical training is developed beyond the amount allotted to the preparation of practitioners.

In filling in the questionnaire each person naturally followed his own judgment of the way the courses given by his school should be reported, and in some cases, what appears to be the same course was listed under more than one of the classifications on the questionnaire, and in others it was listed under only one.

* * * *

Educational Requirements and Years Required for the Course.—The evaluation of the data available on these items is illuminating. The replies depict the reactions to individual ideals, opportunities available, and possibly to the available supply of clinical material and equipment. Experience is the power to assimilate knowledge derived from clinical opportunity based upon sound precept and example. The wide divergence from one to ten years is explained undoubtedly on the score of the intent of the course—to make a man a good practitioner on the one hand or an expert on the other.

Hours of Instruction per Week.—The results of this query are not illustrative of the amount of work required, and the amount of teaching given to the students (residents). A large obstetric and gynecologic clinic puts many demands upon the residents during the many hours consumed in attending patients, in the dispensary, wards and operating rooms. All this is distinctly educational, especially during the early part of the course, when their activities are carried on under supervision, and really continues when they assume full charge of their work. Too, it would be manifestly impossible to evaluate the time consumed in routine laboratory duties, and later, in research.

Answers to the questions on whether the student lives in the hospital and the nature of his work need no explanation. All of the schools in this group control their affiliated hospitals at least so far as staff appointments are concerned.

It will be noted that only 4 of 10 schools that definitely answered the question, "Is any university recognition given for the course?" replied in the affirmative.

It is truly an anomalous situation which confronts us in that Universities give courses which lead to a high order of technical training, producing specialists, and yet do not offer any recognition for the task accomplished. There is no other place in university activity where a comparable state of neglect is manifested. Can we wonder that the terms "specialist" and "professor" are so meaningless as they are in these United States?

TRAINING OF SPECIALISTS

How Many Years of Training Are Required to Make a Specialist?—There were 19 institutions which gave more or less data concerning this question.

Thirteen schools reported on the number of men they had been able to train as specialists, the number ranging from 1 to "approaching 50" and making altogether a total of 147. Six schools made no report on this item.

The Committee sincerely believes that the men who have had the advantages of this training have been so developed in the science and art of obstetrics that they are truly leaders of the specialty. They have spent arduous years in preparing themselves for their professional duties. Not a few men have sought centers where they might secure a reasonable training in obstetrics, either here or abroad: how inadequately they have been trained is a conjecture, or how perfectly they have been equipped cannot be determined. The parody of it is that the term obstetric specialist is meaningless in this country. That this opprobrium is more significant of obstetrics than other special fields is doubtful. It is manifestly easy for the poorly equipped man to get away with the rank and file of obstetric work: the majority of cases require little need for operative intervention, so the self-styled obstetrician has little opportunity of developing skill and dexterity in the operating field. Obstetric experience comes not from the attendance upon a maximum of normal labors. True knowledge, skill and experience come only from the care of a large series of complications in pregnancy, labor and the puerperium.

The medical directory for one of our large cities contains the names of 411 and 440 physicians respectively who are carried in the classified lists as obstetricians and gynecologists: it would be a waste of time to ascertain how many names were duplicated in the lists. Can we wonder that there is the insistent cry for better obstetrics? Is it a wonder that we are confronted with the statement, bandied from one end of the world to the other, that the great United States has almost the highest maternal mortality of the world? Obstetrics needs improvement.

TRAINING FOR IMMEDIATE PROFESSORSHIPS

Only eight schools have definitely provided such training, one has "just started" and another "hopes to." Only four report placing men as professors in Class A medical schools, the number so placed being 20. The remainder either had placed no men or did not reply to the question on this point.

There are more than a thousand physicians who are actively engaged in the teaching of obstetrics and gynecology in the United States. This number includes men of all ranks who are listed in the

medical school catalogs. It is evident from the Committee's survey that the facilities in medical schools for training teachers are not yet adequate, and that most of the men occupying teaching positions have developed through their own efforts, often without the supervision and training of able clinicians, teachers and investigators. Among the group of self-taught men are not a few who, inspired by altruistic motives, have developed themselves into teachers of the highest type. They are the men who have been the pioneers in blazing the way toward the modern conception of what obstetric-gynecologic teaching and practice should be. They graduated from medical school poorly prepared and, inspired by high ideals, developed themselves into great clinicians and teachers.

A number of the Heads of Departments, who replied to the Committee's questionnaire, outlined their own training. Most of them have received their special training in obstetrics by serving as assistant residents, residents, house physicians, instructors and so on up the line until they were finally made full professors. Several have had graduate work in Europe. There are undoubtedly many others in the teaching group who have gone abroad for graduate study. Surely there is an obligation on the part of American medical schools to provide opportunities for graduate work which would make travel to a foreign country for this purpose at least a matter of choice rather than a necessity.

Division of Teaching Faculties.—A study of the faculties of the departments of obstetrics and gynecology as listed in the catalogs of 62 of the 65 Class A medical schools giving four-year courses showed a total of 1045 faculty members. Three hundred and ninety-six taught obstetrics, 343 taught gynecology and 306 taught both obstetrics and gynecology.

For years past many of the European schools have had their professors developed as teachers, clinicians and investigators in both obstetrics and gynecology. The two fields closely interdigitate so that it is impossible to divorce knowledge in one field from that in the other. The present trend in the medical schools of this country is toward the combination of obstetrics and gynecology in a single department as is evidenced by the opinions expressed by the Deans of Medical Schools who replied to the committee's questionnaire on undergraduate teaching. Of 57 who replied to the questionnaire 42 were in favor of a unified department.[1] However, this is relatively a recent development in this country and this accounts in part at least for the division of the faculties into three groups of which over one-third teach obstetrics only, approximately one-third teach gynecology only, and less than one-third teach both obstetrics and gynecology. Presumably those who teach in only one field do not consider themselves,

[1]See report on *Undergraduate Teaching*, p. 786.

or are not considered by others, to be competent to teach both branches. Such a situation will undoubtedly be rectified as more and more of the medical schools make their separate departments of obstetrics and gynecology into a combined department. At present in some of the outstanding schools of the country a man may secure graduate training in one or the other field; often it is difficult for him to secure training in both. Fundamental training in both fields gives a better background for future work even though one subsequently does intensive work in a limited field. No one can cover all phases of both fields with equal thoroughness. However the teacher should be sufficiently familiar with all the more important phases to impart information and direct investigation. It is probable that the next few decades will mark a distinct advance in graduate teaching in obstetrics which will be due largely to more competent instruction associated with the development of unified departments.

GENERAL INFORMATION CONCERNING THE SCHOOLS THAT REPORTED ON POSTGRADUATE AND GRADUATE COURSES

Certain general information concerning the 26 schools which reported that they gave one or more types of postgraduate or graduate courses will undoubtedly be of interest.

Hospital Facilities.—Twenty-two schools control the obstetric and gynecologic services in their affiliated hospitals; 1 reported that it controlled the obstetric service, but made no report on the gynecologic service, and three did not reply to the question on this item. In 15 of the schools and 14 of the hospitals the departments of obstetrics and gynecology are combined. It is probable that one or more of the three schools which did not report on their hospital facilities also have combined departments.

When surgical cleanliness was introduced, in 1880, there was some evident reason why obstetrics and gynecology should have been separated. Gynecology sprang into being as a great specialty—few were trained to perform the tasks which were possible—large fees were commanded. The mundane obstetrics, commonly called midwifery, of that day, was not attractive, the tedious hours of attendance on the confinement, with ridiculously small fees, were not inviting to the men whose prestige commanded large fees. Most obstetricians in the period to 1900 were entirely incompetent to perform any obstetric operations which required surgical technic, so, perforce, the general surgeon or the gynecologist did the few cesareans which were done. During these years, the obstetrician occupied a menial place, entirely unenviable, in the medical school and hospital—and withal, received scant respect from the public at large. With the beginning of the twentieth century the surgical era of obstetrics began. The obstetrician began to come into his own: as his prestige waxed strong, and

he began to develop his knowledge and skill in abdominal surgery, he was increasingly able to cope with the serious obstetric complications which required abdominal operative intervention. In fact, wherever the obstetrician became a skilled abdominal operator, there the mortality of cesareans diminished; the man who knew all the obstetric complications, knew the indications and contraindications for an operation, knew when that operation should be performed, was infinitely safer an operator than the general surgeon and gynecologist who knew next to nothing of obstetrics. Obstetrics and gynecology are fundamentally one and indivisible. In fact, the vast majority of maladies and injuries peculiar to women which bring the women to the operating table are merely delayed manifestations of the mishaps of childbearing. These more properly belong to the skilled obstetric surgeon than to any other operator: remove all of these conditions from the field of gynecology and the gynecologist essentially would be restricted to neoplasms and Neisserian infections. Good obstetrics will diminish the need of gynecology as time goes on. The combination of obstetrics and gynecology into a dual department for administrative, or other, reasons is specious, and usually results in the appointment of a head who is either interested in one field or the other. The results are hardly comparable to conditions when the departments are distinctly separated, each controlled by a man who has an avid interest in this restricted field. The Committee firmly believes that the two should be unified as a pedagogic and clinic entity, a man who is not regularly performing major abdominal operations is not a finished obstetrician; the patient, the student, and the obstetrician himself demands that unification should be the rule.

It has been stated that fully one-quarter of the general practitioner's income is derived from obstetrics, and a like proportion of his professional time is devoted to the same field. This is not far from correct: in view of this it would seem that in some of the schools obstetrics did not have the quota of beds desirable for its pedagogic needs. That students of medicine may receive adequate clinic opportunity in obstetrics there should be, under the most conservative estimate, at least one teaching maternity bed for each student enrolled in the class; each bed will approximately supply the needs of 26 or 30 confinements annually. For the undergraduate instruction there should be a maximum of normal labors, without an undue disproportion of pathologic material, although the student should be able to see all phases of the pathology of the childbearing woman. On the other hand, the graduate student should have a great opportunity for witnessing and, under proper supervision, operating on complicated labor cases. An intimate knowledge of all the normal phenomena of the parturient state is the foundation for obstetric practice; only by an extensive and varied experience with pathologic material may the

student equip himself as a truly trained obstetric specialist. The ideal maternity for the graduate student is one which has a constant influx of complicated cases, brought in by the police ambulances or other agencies: "neglected cases" offer invaluable experience to the graduate student.

Teaching Facilities.—The personnel in 13 schools were on a part-time basis, in 5 schools they were on a full-time schedule, in 4 schools part of the personnel were on part time, others on full time, 1 school said "neither full nor part time" and 3 did not answer. In 10 schools it was felt the personnel was adequately compensated, in 11 schools it was believed the pay was insufficient, one said that not enough of the staff were well paid, in one school teachers received no pay, and 3 schools made no reply.

In response to the question, "Are the teachers required to conduct and direct research studies?" 11 replied in the affirmative, 9 stated it was not required, one said this was gradually being required and 5 made no reply.

Laboratories.—A survey made by the Committee showed that some 75 per cent of the schools that made definite replies are equipped to take care of routine laboratory work; whether these laboratories are departmental divisions or are an integral part of the service is relatively immaterial, though it would be desirable for the department to have its own laboratory technicians, equipment, etc., all houses contiguous to the wards. As to research, the equipment is sufficient for adequate investigation in approximately 60 per cent of the schools that made definite replies. There is an increasing conviction that each department of the college and hospital should have its own laboratory for routine study and research. The principles of the basic sciences may better be inculcated into the minds of students, undergraduate and graduate, if the laboratory findings are directly "hooked up" with clinical manifestations and this only may most happily be realized when the department has its own laboratory facilities so all the department personnel may have ready access for the study of their individual problems.

Budgets.—The question was asked if the budget was adequate for materials, technicians, and servants. The answer was favorable in 15, 12, and 10 respectively; an unfavorable reply was made in 7, 10, and 9 respectively, and one said "partially" adequate for servants. The remainder did not reply.

Type of School.—In response to the question "Is your school a University Institute or a Trade School?" the professors of 11 schools certified to the fact they had an "Institute," and 3 that they had a "Trade School." Strangely enough, two of the teachers in the latter group are members of faculties of strong medical schools. There was no reply from 9 schools and the remainder gave some indefinite an-

swer such as "neither," "not a trade school," "not a trade school nor an ideal university institute."

Library Facilities.—Library facilities were available in 22 schools; absent in 1; and 3 failed to answer.

COMPLETENESS OF THE REPORT

The foregoing summary is made up from questionnaires received from 42 of the 65 Class A medical schools in the United States which give four-year courses. No questionnaires were received from 23 of the Class A schools. However, only one of these schools is listed by the Council on Medical Education and Hospitals of the American Medical Association as giving graduate courses in obstetrics. Although not all of the schools that are doing graduate teaching in obstetrics are included in this list, failure of the schools to return a questionnaire coupled with their omission from this list by the council would seem to indicate that little if any graduate teaching in obstetrics is done by them.

The report does not include information on the courses in obstetrics given by one graduate medical school which is on the list of graduate medical schools approved by the council.

These two schools are the only known omissions from the report.

RECOMMENDATIONS

1. More teaching institutions should endeavor to provide adequate graduate courses in obstetrics.

2. While this Committee believes the fifth, or intern year of medicine to be an essential part of undergraduate education it must be remembered that the great majority of medical schools and state licensing boards do not so recognize it and until they do, adequate provision should be made to provide postgraduate and graduate courses in obstetrics for those graduates who have not had the educational opportunity offered by the intern year.

3. The European plan of the "Frauenklinik" which has been initiated in this country should be extended to all medical schools. Gynecology should be confined to a place subordinate to obstetrics.

4. Each university medical school should have its own maternity hospital sufficient to meet the undergraduate and the graduate requirements if such schools undertake to do graduate teaching. Schools with maternity hospitals located in metropolitan areas where they have a large amount of pathologic material are best suited for graduate education in obstetrics.

5. Certain fundamentals should be an integral part of each type of postgraduate and graduate teaching. The Committee recognized the importance of having in all medical schools strong departments for the clinical branches. The departments of the basic sciences assume

especial importance in a medical school which undertakes to give graduate instruction for the purpose of training competent specialists, teachers, or investigators in the field of obstetrics.

6. The modern teacher should be well trained in operative technic as well as in all other clinical fields. It is desirable that he be a trained investigator.

7. Hospitals which are not closely associated with educational institutions are not suitable places for true graduate education but with the proper development of a teaching staff they would fulfill a very important place by giving postgraduate instruction designed to train men for special practice.

8. Graduate schools should have comparable methods of describing their courses which would give the prospective candidate a clear idea of the nature and length of the course and the credits given.

9. Schools giving graduate courses should adopt common minimum standards. This would not prevent any school from offering a more highly developed course.

10. In graduate education a candidate should fulfill certain fundamental requirements which would be a measure of his ability before being recognized as a specialist, a teacher, or an investigator, and before being given a degree. "Hours" have no significance in graduate teaching.

11. State universities should develop courses of the circuit type for the purpose of improving and keeping local practitioners up to date.

12. Steps should be taken by the medical profession to the end that only properly qualified physicians may designate themselves as obstetric specialists capable of deciding upon and performing major obstetric procedures. There should be some ethical relationship between practitioners and specialists which would enable them to work together to serve the best interests of the patient.

13. No hospital should permit other than a well-qualified obstetric specialist to attend a serious obstetric complication or perform a major obstetric operation without consultation with a well-qualified specialist, preferably one attached to the hospital staff.

14. All interested organizations should endeavor to stimulate improvements in obstetric teaching and practice.

CONCLUSIONS

1. It is well recognized that the vast majority of gynecologic practice is concerned with the correction of belated ill consequences of childbearing. The gynecologist who is not in intimate contact with all phases of obstetrics has lost much of his perspective in operating on women of the childbearing period. The obstetrician who does not do the surgery of the lower abdomen is hardly competent to do the major abdominal work of obstetrics.

2. Adequate graduate as well as undergraduate education in obstetrics is necessary to provide skilled obstetric and gynecologic care to women and to prevent the ill consequences of childbearing. The first step required is the complete unification of departments of obstetrics and gynecology in teaching institutions.

3. A unified department demands that all the personnel shall teach and practice both the immediate and the remote care of the childbearing woman and shall teach both branches.

4. Improvements in obstetric practice will come only from improvements in undergraduate and graduate education in obstetrics. This should result in a decrease in the number of maternal and early infant deaths and a reduction in the complications which contribute to or cause conditions necessitating operative procedures later.

5. Postgraduate and graduate courses in obstetrics have not been developed in the United States to the extent necessary to meet the need and demand for such teaching.

6. Only 19 of the schools replying to the Committee's questionnaire report that they give courses designed to train men as obstetric specialists. Thirteen of these schools report that they have trained 147 men. Obviously many of the men practicing as obstetric specialists have gained their experience through practice rather than formal graduate training. The term "obstetric specialist" as used in this country does not always indicate special preparation or qualifications in this field. A new and better plan should provide that no man be designated as an "obstetric specialist" until he has proved his ability to so function.

7. Only ten of the schools replying to the Committee's questionnaire report that they give courses designed to train men for holding professorships in Class A medical schools. There are more than 1,000 physicians engaged in teaching obstetrics and gynecology in the United States. Many of them have developed themselves after a more or less insufficient undergraduate training.

8. Work done in a number of states has demonstrated that circuit or extension courses are a valuable means of bringing inspiration and knowledge to physicians who are distant from or unable to attend resident courses in the large medical centers. These courses should be practical and bring only tried and true facts to physicians; fads should not be tolerated.

9. The plans inaugurated by the Chicago Medical Society, and the Kansas City Southwest Clinical Society and others appear to offer another practical method of supplying postgraduate instruction in obstetrics and to be worthy of emulation by other societies.

OBSTETRIC TRAINING OF NURSES AND ATTENDANTS*

By George W. Kosmak, M.D., New York, N. Y.

THIS Committee, in an attempt to learn how nurses are being prepared for obstetric nursing today and what they really know about maternity care, has made a study of:

1. The nurse's knowledge about obstetric nursing in 1930.
2. The state regulations governing hospital schools of nursing where obstetric nursing is taught, including the curricula for that teaching.
3. Some of the actual conditions in 1930 in a number of the schools of nursing where obstetric nursing is taught.
4. Some of the opportunities for postgraduate work in obstetric nursing.
5. The trained attendant in maternity care.

This report therefore includes five sections, each covering one of these five points, followed by a summary of the recommendations and a conclusion.

I. THE NURSE'S KNOWLEDGE OF OBSTETRIC NURSING IN 1930

Before studying the education of nurses for obstetric nursing, it is well to have a present-day picture of what nurses are called upon to do in this field, and of just how much they really know about maternity care.

Maternity care should be the same the world over. Whether the mother lives in the city or the country, in a palace or in a hut, she needs medical and nursing supervision, care, and instruction during pregnancy; an aseptic delivery under the direction of a skilled obstetrician; and medical and nursing supervision, care and instruction until after she is able to resume her regular responsibilities and to care for her baby. Physical surroundings and the attitude of mind of the patient and her family may differ, but the actual care of the mother should be the same.

What part the nurse will take in this supervision, care, and instruction of patients, will differ in different communities. Just what it will be in any given instance will depend on the available medical and nursing facilities and on the division of labor between the doctor and the nurse. Of course, certain parts of the care must be given by the doctor and under no circumstances can these be delegated to the nurse, no matter how complete is her knowledge of obstetric nursing or even of midwifery.

* * * *

*Report in part of Section b, Subcommittee I, on Obstetric Teaching and Education of Physicians, Nurses, Midwives, Social Workers, and Laity.

For lack of space only the recommendations and conclusions can be printed here.

To learn how much nurses really know, today, about maternity care, this committee submitted two questions to three groups of nurses. The questions, chosen because they were comprehensive and avoided controversial differences of opinion about obstetric procedures, were:

1. State what you consider constitutes complete care for a mother from the beginning of pregnancy until the baby is six weeks old.

2. How can maternal mortality be prevented? The groups of nurses selected were:

1. Private duty nurses registered in 1930 for obstetric nursing in the 93 Nurses Official Registeries. Each registrar was asked to send the names of ten nurses to whom the questions could be submitted.

2. Nurses graduating from schools of nursing in 1930 and taking the State Board examinations in the summer months. Each Board of Examiners was asked to present the questions to its applicants, with the request that they be answered, not for credit, but as a contribution to the work of President Hoover's Conference.

3. Nurses taking postgraduate courses in public health nursing in 9 universities in 9 states, and writing examinations in the summer of 1930. The directors of the courses presented the questions as supplementary to their examinations in much the same way as the state boards of examiners did to the second group.

The first group includes nurses who had their formal education in obstetric nursing few or many years ago and have added to that education, more or less experience in obstetric nursing.

The second group includes the nurses who have just completed their formal education in obstetric nursing and at the same time, represents the majority of nurses doing obstetric nursing in the hospitals, since most of that work is done by student nurses.

The third group includes nurses who had their formal education in obstetric nursing few or many years ago. They have had, too, a certain amount of experience in obstetric nursing and that staff education which is given by most public health nursing organizations. Obviously they have more than average interest in improving their equipment as evidenced by their enrollment in the public health nursing courses. Furthermore they have had also whatever obstetric nursing instruction is included in the theory and practice of the present postgraduate courses in public health nursing.

In all 1,622 nurses returned the answers to these questions. This is, of course, only a sampling of the nurses doing the obstetric nursing throughout the country in 1930 but it can be considered representative of the whole number.

Significant Findings.—The answers to the question about what constitutes complete maternity care, contained no comprehensive statement of maternity care as a continuous medical and nursing service to mothers from the beginning of pregnancy through the puerperium. The nurses answered the question by listing the various items in the

detail of that care and supervision. The lists were incomplete in almost every instance.

There seems to be no escape from the conclusion that nurses do not know what adequate maternity care is when, out of 1622 nurses, 17.9 per cent mention, as an essential element of that care, a physical examination followed by continuous medical supervision during pregnancy, 8.4 per cent mention pelvimetry, 23.7 per cent mention blood pressure, 66.5 per cent include any one of the elements of good personal hygiene, 24.9 per cent mention an aseptic delivery, 8.7 per cent postpartum medical care and only 5 per cent postpartum nursing. One wonders if the answers would have been any better if the question had asked for the details of some nursing procedures. It seems hardly probable when these answers reveal so little understanding of the value and significance of the individual procedures in the whole service.

The question about preventing maternal mortality was not answered at all by a discouragingly large proportion of the nurses. Very few of them answered it in a way to indicate that they had any real knowledge of the causes of maternal mortality or of the means for reducing it. A number answered it in a way that showed they had no idea what the question meant. The answers included such statements as "maternal mortality should not be prevented," "by belief in God," "it is now so low that nothing more can be done about it," "oh, dear, I don't know," "by better obstetrics," "by enforcing the Volstead Act," "by birth control," and "by the above care," meaning the incomplete care that was outlined in the answer to the first question.

And so we must conclude that, with few exceptions, nurses do not know that many of the deaths of mothers in childbirth can be prevented, that obstetric nursing plays a part in that prevention or that the great number of those deaths in this country is a national problem that challenges every doctor, nurse and health worker who comes in contact with pregnant mothers.

It is significant that the nurses taking the postgraduate courses in public health nursing answered the questions better than the other two groups and that the private duty nurses did better than the new graduates. The best answers came from the students in a postgraduate course in public health nursing who had recently attended an institute in obstetric nursing.

Examination questions at best are only one means of testing knowledge, but if we cannot expect nurses to be able to explain the care pregnant mothers need and why they need it, our task of teaching the public is even greater than we thought it. Furthermore what the nurse says does influence many patients and their friends and what can be worse than influence based on ignorance of the fundamental essentials of good maternity care? Truly this is one time when "a

little knowledge is a dangerous thing." Perhaps our method of including obstetric nursing in the fundamental education of all nurses is not so effective as that of requiring postgraduate courses for those who will do obstetric nursing. Perhaps it is the emphasis of our teaching that is at fault. Perhaps we emphasize the "how" of our individual hospital routines at the expense of the "why" that helps the nurses to think and gives them a broader understanding. Perhaps it is the amount of our teaching and experience that is inadequate. The next three sections of this report are devoted to an analysis of the teaching of obstetric nursing.

The Committee therefore recommended: That this apparent lack of knowledge about maternity care among nurses doing obsteric nursing be called to the attention of state and national nurse associations, state and local departments of health and organizations concerned with the prevention of maternal mortality and that they be urged to conduct institutes or other refresher courses for all nurses doing obstetric nursing.

II. STATE REGULATIONS GOVERNING THE HOSPITAL SCHOOLS OF NURSING WHERE OBSTETRIC NURSING IS TAUGHT

Committee Procedure.—This committee examined the state laws and board rulings of 43 states and the District of Columbia. While not complete, this number gives a fair picture of the whole.

The requirement in these 44 states for volume of work as determined by the size of the hospital varies from 20 to 50 beds with a daily occupancy of from 15 to 50 patients.

In 11 of the 44 states the requirements do not specify either the theoretical instruction or the practical experience of the curriculum for teaching obstetric nursing. In 26 of the other 33 states the requirements specify the number of hours of theoretical instruction in obstetric nursing varying from ten to forty-five with the majority requiring sixteen hours. In 8 of the 33 the requirements specify the use of the League Curriculum. In 2 of the 33 states curricula have been prepared by the Boards of Nurse Examiners of those states. In the other 23 there are no specifications about the content of the instruction in obstetric nursing except that 7 of them require Lectures and Demonstrations.

* * * *

In 28 of the 33 states, the requirements specify either the time to be spent in practical experience in the obstetric department, or the number of obstetric cases each nurse must have, or both. The time is usually three months but the number of cases varies from 5 to 20, the majority being 10 or 12. The number of cases seems to mean the number of deliveries at which the nurse must assist and usually implies a related amount of postpartum and postnatal experience. In only 2 states is there any mention, and neither is a requirement, of

correlating the hospital instruction and experience with actual supervised work in the homes of patients.

* * * *

This comparison of the *state regulations* affecting the teaching of obstetrics with a statement of the *necessary fundamentals* possible of acceptance by the majority of schools of good standing shows:

1. Hospitals with too few patients to offer adequate variety and volume of service are accredited as schools of nursing in most states.
2. The educational prerequisite required for admission to schools of nursing is too low in most states to assure students capable of making the most of good instruction in obstetric nursing.
3. The length of the course in nursing required is adequate in the majority of states.
4. The theoretical instruction in obstetric nursing required, is inadequate in most of the states where it is specified while in about one-fourth of the states there is no attempt to specify the amount of instruction.
5. The amount of time for practical experience in obstetric nursing required in the majority of states where it is specified, is equal to that considered necessary by the League Curriculum for elementary instruction in obstetric nursing if properly spent in the different parts of the obstetric department and if adequately supervised.
6. There is no requirement in most of the states for experience in the care of normal pregnant mothers before delivery or in the care of patients in labor or postpartum patients outside the hospital.
7. There is no requirement about the qualifications of teachers and supervisors.

The Committee recommended: I. That since laws and regulations usually follow rather than lead public opinion and practice, no direct effort be made at this time to improve the state regulations affecting the teaching of obstetric nursing; but that enthusiastic support be given to every improvement proposed by the State Boards of Nurse Examiners.

II. That an effort be made to acquaint the public particularly organized groups like Chambers of Commerce, Rotary Clubs, Federated Women's Clubs, etc., with the community's need for nurses who know obstetric nursing to help in the maternity care that will reduce our high maternal mortality, and to urge them to support every move to increase the state requirements for their preparation to do that work.

III. SOME OF THE ACTUAL CONDITIONS IN 1930 IN A NUMBER OF THE SCHOOLS OF NURSING WHERE OBSTETRIC NURSING IS TAUGHT

State regulations present the minimum requirements for schools of nursing, not necessarily the conditions in the majority of schools. Some of the important conditions affecting the teaching of obstetric nursing are not touched upon in the state regulations.

Committee Procedure: The Committee prepared a questionnaire covering some of the conditions affecting the teaching of obstetric nursing and sent it to the Directors of Nursing in 593 hospital schools, in order to learn what these conditions are today.

Questionnaires were returned by 316 schools, of which 300 were in general hospitals and 16 in special maternity hospitals. Not all questions were answered on every questionnaire. This provides a sampling of the schools in hospitals of the maximum bed capacity required by the state regulations, and represents all the states.

Significant Findings: The Committee learned from the List of Accredited Schools that in January, 1928:

Sixty-five per cent of schools teaching obstetric nursing are in hospitals having a daily occupancy of 50 or more patients, the maximum required by any state regulation.

Thirty-one per cent of them in hospitals having 100 or more, the number suggested as necessary in the League Curriculum.

Sixty-seven and four-tenths per cent required more than one year of high school as a prerequisite. The majority of states require one year.

Thirty-one and nine-tenths per cent required full high school which the League Curriculum considers necessary.

Eighty-seven and five-tenths per cent of the schools teaching obstetric nursing gave a course in nursing of three or more years.

* * * *

The consideration of present conditions shows:

That 35 per cent of the schools teaching obstetric nursing are in hospitals with a daily occupancy less than the maximum required in any state regulation and only 31 per cent have a daily occupancy equal to that considered necessary by the League Curriculum, while only 31.9 per cent have the educational prerequisite considered necessary by the League Curriculum.

With poorly prepared instructors and supervisors and with students doing all the nursing and therefore not always free to take advantage of opportunities to learn, it is fair to say that a service of less than 10 obstetric patients a day does not offer a sufficient volume and variety of experience for teaching obstetric nursing. Yet 50 per cent of the hospitals teaching obstetric nursing and answering this questionnaire offer less than that, and do not include antepartum or postpartum clinics.

The Committee recommended: I. That these conditions affecting unfavorably the teaching of obstetric nursing and the apparent ignorance among nurses doing obstetric nursing, be discussed with the Executive Secretary of the National League of Nursing Education and a plan made for calling the situation to the attention of Hospital Trustees, Medical Boards, Superintendents, and Directors of

Nursing, with a formal request from the White House Conference that they arrange to give nurses a better preparation for helping in maternity care.

a. By improving obstetric service in accordance with the standards of maternity care published by the Children's Welfare Federation in 1930.

b. By using graduate nurses and attendants, not student nurses, where the volume of service and facilities for teaching are inadequate.

c. By improving, by a program of staff education, the qualifications of the nurses now teaching and supervising in the obstetric departments.

d. By employing graduate nurses to do some of the nursing, so the students may be freer to make the most of learning.

e. By making the prerequisite for admission to the school, four years of high school.

f. By planning for all students as soon as possible, practical experience which shall include antepartum and postpartum clinics (with home follow-up as assistant to the prenatal or social service nurse), general nursing care of bed patients in maternity wards, of babies in nurseries, of at least 20 patients in labor and during delivery, delivering one or more patients under supervision, work in an out-patient department or visiting nurse association doing prenatal, delivery, and postpartum work under good supervision so the students can learn to adapt teaching to home conditions while still being taught.

g. By giving the theoretical instruction outlined in the League Curriculum.

IV. SOME OF THE OPPORTUNITIES FOR POSTGRADUATE WORK IN OBSTETRIC NURSING

Committee Procedure: The Committee included a query about postgraduate work in obstetric nursing in the questionnaire sent to the 593 hospitals.

Significant Findings: Of the 316 schools returning the questionnaire, 36 offered postgraduate work in obstetric nursing. These courses are practically the same in content as the undergraduate, and, in most instances, they were established for the same purpose, namely, to secure nursing service for the hospital. The experience of the postgraduate students is not arranged for its educational value any more than is that of the undergraduates. The instructors and supervisors are those found in the 316 schools described in the third section of this report. These courses do not meet the requirement of a true postgraduate course for advanced study and experience built on a known prerequisite of theoretical instruction and practical experience in the same field. They do give nurses an opportunity to learn something about obstetric procedures as they are carried out in different hospitals and directed by different obstetricians. In this way

they do offer additional experience and may also serve as a means of keeping graduate nurses in touch with changes and developments. They do not, as now organized, offer adequate educational facilities for the preparation of experts except as nurses with superior educational background can capitalize the experience by self-directed study.

* * * *

The Committee recommended: I. That Hospital Trustees, Medical Boards, Superintendents and Directors of Nursing be urged to accept as students those graduate nurses who wish to make up for the deficiencies in their elementary instruction in obstetric nursing or to keep informed of changes and developments in obstetric procedures.

II. That a suitable Committee be asked to consider also the preparation of a curriculum for a true postgraduate course in obstetric nursing and of a plan for securing at least one such course.

V. THE TRAINED ATTENDANT IN MATERNITY CARE

In addition to registered graduate nurses who are known to have had at least a specified minimum of education for obstetric nursing, there are many trained attendants from registered or nonregistered schools as well as many women, with no formal preparation but with varying amounts of experience and skill, giving an unknown kind of nursing care to maternity patients. The number of these women, known generally as practical nurses, who are employed, seems to indicate a need for an attendant who will stay in the home of the maternity patient and will do housework as well as nursing. Only a small part of the whole number of maternity patients is cared for in hospitals where the selection and supervision of nurses and aids or attendants is comparatively easy to control.

The registration of schools for trained attendants, the licensing of their graduates and some form of supervision for these attendants seems to be necessary for the protection of patients and doctors.

The Committee learned from the State Boards of Nurse Examiners, that in four states the schools for trained attendants are registered and that there are fourteen such schools. Questionnaires were sent to all these schools and were returned by nine of the fourteen. These questionnaires showed that none of these schools gives a sufficient training in maternity care to qualify their graduates to care for maternity patients.

There are a considerable, but impossible to determine, number of maternity, and other special hospitals, conducting nonregistered schools for trained attendants. Their graduates are probably well trained though there can be no assurance that even a minimum standard of instruction is followed because there is no check on schools that are not registered. Many of these nonregistered schools have undoubtedly dropped their state registration because the state requirements for the registration of schools for trained attendants did not

take into consideration the maternity attendant but were framed with thought for the attendant for the care of chronic illness or of mental patients. Further study of the use of attendants would seem to be necessary in order to shape a minimum standard of requirements for their training schools. Untrained and unlicensed attendants or practical nurses do a great deal of maternity work of an unknown quality. Trained in registered schools, licensed and supervised they can do a great deal of valuable work to supplement the work of the doctor and the nurse in any community program for adequate maternity care.

* * * *

The Committee recommended: I. That a special committee be formed to study the best way to prepare, control, employ, and supervise attendants for maternity work.

This Committee to include in its membership, obstetricians, public health nurses and nurse registrars who have worked with attendants, nurse superintendents of schools for trained attendants, and representatives from Boards of Nurse Examiners in one or more of the states registering schools for attendants, laymen interested in the community nursing service, and educators.

CONCLUSION

The hasty study that it has been possible for this committee to make, of the teaching of obstetric nursing, has shown that teaching to be inadequate and to be affected by the conditions in the schools of nursing which have assumed or accepted the responsibility for the teaching of obstetric nursing as part of the fundamental education for nursing.

Improvement in the teaching of obstetric nursing is dependent either on correcting the conditions affecting it unfavorably in the schools of nursing or on devising some means for teaching obstetric nursing to large numbers of graduate nurses as a postgraduate subject before they are permitted to care for maternity patients. Both possibilities involve work by a Committee especially interested in maternity care and qualified to develop methods for, and to stimulate the adoption of, better teaching of obstetric nursing. Such a Committee would need funds and a full-time secretary who should be a nurse who knows obstetric nursing. Such a Committee should work closely with the National League of Nursing Education and the Committee on the Grading of Schools of Nursing to avoid duplication of effort.

It will be some time before the work of such a Committee can be finished. In the meantime those improvements that can be stimulated by an appeal from the White House Conference to all Hospital Trustees, Medical Boards, Superintendents, Directors of Nursing, Boards of Nurse Examiners and nurses associations should be encouraged.

THE EDUCATION OF MIDWIVES*

By James R. McCord, M.D., Atlanta, Ga.

INASMUCH as one of the most important factors in the health and protection of the child is the survival of its mother at childbirth, and as survival of the mother is in turn affected by the type of care she receives at childbirth, a complete program of child care must take into consideration not only the obstetric education of the physician, who, in this country, attends approximately 85 per cent of the births, but also the midwife who attends a large part of the remaining 15 per cent.

* * * *

It is not possible to include in this brief survey a detailed account of the development of regulations and midwife education, country by country. In general it is known that such rules governing midwives as existed in Europe before the nineteenth century had legal and religious aspects rather than medical. In Denmark the first midwife commission was established by law in 1714 and in the same year an examination for midwives was provided by law, but a system of instruction for midwives was not started until 1787. Gradually the need for state regulation concerning education and practice came to be recognized, and during the nineteenth century regulations were put into effect in all countries of Europe except England, the latter not enacting such legislation until 1902. Today all countries of Europe have standards for midwife education, either national or provincial. In Germany, for example, each state has its own laws, and the same applies to the cantons of Switzerland. Some countries have both state and private schools, others have state schools only, and in others all schools must be approved by the state. A midwife must complete a course of training varying from six months to three years. In France, final examinations must be given only by the medical department of a university. In Denmark where the instruction is carried on as part of the maternity-hospital service, the midwives are taught by doctors, nurses, and midwives, and the teaching is under the direct supervision of two professors of obstetrics from the State Medical School. For the most part, in European countries midwives are taught and permitted by law to attend only normal cases of delivery, but there are exceptions to this. In Sweden, with a scattered rural population, it is recognized that a midwife must be capable of acting in emergencies, and she is taught to perform certain obstetric operations such as manual removal of the placenta, external, internal and combined version,

*Report in part of Section c, Subcommittee I, on Obstetric Teaching and Education of Physicians, Nurses, Midwives, Social Workers, and Laity.

extraction in breech presentation and the use of low forceps. In Denmark, in addition to the care of normal confinement, a midwife may act on her own responsibility in a number of complications, including extraction of breech presentation in a multipara, version of the second twin if it lies in transverse presentation, suturing of lesser ruptures of perineum and use of ergot for lesser postpartum hemorrhage. In both Denmark and Sweden midwives attend more than 85 per cent of the births.

The public control of midwives in Europe is by regulations pertaining to licenses, birth and other reports, records of work, disease notification, requirements for calling in a physician in complicated cases or emergencies, punishment for malpractice or violation of the regulations, and in some places by supervisory visits. There is no provision for inspection of midwives' patients by physicians, except in cases of complications following delivery.

In most countries of Europe the midwife in training pays a tuition fee for her course of instruction, but frequently this fee is very small. In Austria free training is provided and in Holland a certain number are given free training in return for their practicing in scattered country districts at a fixed salary.

In order to insure the services of a trained midwife in communities where the number of confinements is so small that the fees from private practice would not yield a living wage and also to provide services for indigents, some countries have adopted the plan of supplementing the midwife's income by a grant or salary from public funds.

This brief summary will serve to point out some of the main points in the history and present status of the midwife in Europe. Now let us turn our attention to this country.

The first permanent settlement in America was made in 1607, just seventeen years after the death of Paré and but a few more years after the establishment of the first school for midwives in Paris. As would be expected, in America under the primitive conditions of colonial days, midwifery did not receive the attention that it was receiving abroad. Women in the colonies were assisted in childbirth by midwives, if they were available, or by women friends. It may be of interest to know that the wife of Dr. Samuel Fuller, who landed from the Mayflower, was the first midwife of the Massachusetts colony. While the countries of Europe were slowly but surely improving the standards and practice of their midwives the colonies gave no attention to the matter with the result that ouside of a few urban centers the program of midwife education and supervision in the United States did not begin until the twentieth century, and today we have many thousand untrained women acting as midwives. Or to put it another way, we have large groups of people in various parts of the

country for whom the only attendant available for the mother at confinement is an untrained midwife.

The first midwife ordinance in America was passed by New York City early in the eighteenth century. This ordinance dealt with the midwife's civil activities rather than her care of the mother, the only provision in regard to the latter being that in case the midwife saw the mother or child in peril she should call in other midwives for counsel, and that she would not administer any medicine to produce miscarriage.

The first officially recognized midwife school in America was established at the Bellevue Hospital in New York City in 1911.

Most, if not all, of the state laws specifically referring to the midwife have been enacted in the last thirty years. They cover such items as registration, reporting of births, use of a prophylactic in the eyes of the newborn, educational requirements, examination and licensure, and in some cases prohibitions in regard to use of drugs or instruments or attendance on certain types of cases without calling a physician. The laws also provide penalties for violation.

In order that it might have the most recent information on the midwife situation the committee sent a questionnaire to the health department of each state and territory and the Philippine Islands. The data secured from the several health departments on the number of midwives practicing and the manner of licensing and controlling them are too extended for inclusion in this concise report.

From a study of these data it may be noted that the methods of licensing and controlling midwives are distinguished by their variety. In some states the midwives must have had a course of training in a recognized school of midwifery, in others they do not have to take a course of training, but are required to pass an examination or to satisfy some state or local official that they are qualified; in still others they are only required to register, and some states have no laws regarding registration or licensure.

The reason for this variety and the low educational requirements in most states is easy to understand when the opportunities for midwife training in the United States are considered. There are but two schools; the first of these was established in New York City in 1911 and is limited almost to applicants who wish to practice there. The second school was established only a few years ago in Philadelphia. Realizing the uselessness of laws and regulations that require the midwife to have a course in a recognized school of midwifery when there are no schools available, many states have set up practical requirements which fit the local situation. Most of the midwives who have had a formal course of training providing both theoretical and practical instruction are graduates of foreign schools. Such graduates are found among the white midwives; with the exception of a few nurses

who have had a course of midwifery training, most of the colored midwives are untrained.

A very interesting educational project conducted by a private individual has been the work of a woman physician in Salt Lake City, Utah. For many years this physician has given a formal course of instruction to women wishing to become midwives and when she was in active practice the students were given practical training by accompanying her to attend her own cases. Other local physicians have cooperated to some extent in giving this practical experience.

Most of the State Boards of Health in states having a midwife problem have, in the last eight or ten years, done what they could to improve the situation either directly or through the county health departments. In the southern states, nurses, and occasionally doctors, have conducted courses for midwives in which theoretical instruction has been given, the oldest, most ignorant, and unfit of the colored midwives have been eliminated from practice, and the requirements for a permit or license raised. Work of inspection or supervision has been begun or extended. In some instances, younger and better educated women have been urged to attend the classes so that thy might replace some of the older and less qualified ones. The courses of instruction have consisted of only a few lessons in some instances and in others have been more extensive. In Georgia and South Carolina practically every midwife in the State has had the advantage of a short course of lessons. In some places, however, a midwife program has been conducted in only a few counties. In South Carolina during two successive summers, one-month courses of combined practical and theoretical training were conducted at a hospital connected with a colored school. Many colored midwives took advantage of this opportunity for a real course in midwifery brief as it was. In Kentucky a course in midwifery was given at a small hospital located in the mountain section and one class was graduated. Lack of funds prevented continuation of the course. Two national organizations which have assisted in this midwife educational program by lending physicians to conduct midwife classes are the American Child Health Association and the Federal Children's Bureau.

Many of the states where there are large numbers of white midwives have increased their supervisory work and made efforts to raise the qualifications for licenses. The most extensive work has been done in New York, New Jersey, and Pennsylvania. In all three of these states an applicant for a license to practice midwifery must be a graduate of a recognized school of midwifery or maternity hospital, or (New York and Pennsylvania) produce evidence that she has attended a certain number of confinements under the instruction of a physician. In New Jersey a postgraduate course for midwives was begun at the Jersey City hospital about three years ago and within

the last few months Cooper Hospital, Camden, has offered such a course. There is also a State Association of midwives which has an annual meeting, and a quarterly bulletin called the "Progressive Midwife" is issued by the State Bureau of Child Hygiene which has charge of the supervision of midwives.

With the exception or two or three states, the great gap in the educational work has been the lack of facilities for giving the midwife practical training and experience. The two existing schools can accommodate only a few students and it is not economically possible for midwives from a distance to attend them. There are no schools available for the colored midwife, the one in greatest need of training and the one who serves the largest number of people.

Another gap in the midwife program has been that many of the people who have sought to train and supervise the midwife have not had special midwifery training themselves. Much of the supervisory work has been concerned with birth reporting, prevention of ophthalmia neonatorum, and inspection of the midwife's home and equipment. These things are important but not sufficient.

With regard to laws and regulations, one state frankly admits that local necessity makes its laws regarding the licensing of midwives unenforceable. The same situation probably exists in other places where the officials are less frank. In Massachusetts, because of an interpretation of the medical practice act made in a court decision, midwives are not legally permitted to practice, but a survey conducted by the State Department of Health in 1921 revealed the fact that several hundred births had been attended by midwives in the six districts covered by the survey. Obviously it is not logical to institute a program of education and supervision for something that is not supposed to exist and therefore no work for the education or supervision of the midwife is carried on in this state.

In the recommendations made to the committee by State Health Officials the need for training and supervision of midwives was particularly emphasized.

MATERNAL MORTALITY IN MIDWIVES' PRACTICE

Any recommendations relative to the midwife problem must be preceded by an examination of the facts to determine the relation between midwives' practice and maternal mortality. To do this accurately it is necessary to have separate figures on the number of births attended by physicians, midwives, and others, and the number of deaths occurring in the practice of each group. Such figures are obtainable only from a few communities and so it has seemed worth while to supplement them with statistics from countries and states having a large number of deliveries attended by midwives. For purposes of this study an effort has been made to collect as many sta-

TABLE I. TREND OF MATERNAL MORTALITY IN THE UNITED STATES AND CERTAIN FOREIGN COUNTRIES*

COUNTRY	DEATHS FROM CAUSES ASSOCIATED WITH PREGNANCY AND CHILDBIRTH PER 10,000 LIVE BIRTHS													
	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Australia	43	53	56	47	47	50	47	45	51	55	56	53	59	--
Belgium	--	--	--	--	72	60	57	53	56	58	50	61	--	--
Canada	--	--	--	--	--	--	51	55	54	60	56	57	56	--
Chile	66	73	72	82	88	75	79	80	74	61	61	58	58	47
Czechoslovakia	--	--	--	--	37	40	37	--	33[1]	31[1]	33[1]	34[1]	36	--
Denmark	--	--	--	--	--	24	20	20[1]	26	23	24	26	31	--
England and Wales	42	41	39	38	44	43	39	38	38	39	41	41	41	44
Esthonia	--	--	--	--	--	--	--	--	45	40	38	41	41	--
Finland	--	36	38	44	40	36	33	30	31	35	29	32[1]	30	--
Greece	--	--	--	--	--	--	73	72	85	88	--	--	--	--
Hungary	--	42	40	52	29	32	29	30	28	31	29	32	30	--
Irish Free State	53	57	49	48	47	49	50	57	48	48	47	49	45	49
Italy	22	27	30	37	29	28	26	25	27	32	28	26	26	--
Japan	36	35	35	38	33	35	36	33	34	31	30	27	28	28
Lithuania	--	--	--	--	--	--	--	--	--	--	59	56	50	--
The Netherlands	--	--	--	29	33	24	23	25	23	24	26	29	29[1]	34
New Zealand	47	59	60	52	51	65	51	51	51	50	47	42	49	49
Northern Ireland	56	50	51	47	46	69	52	47	49	45	44	56	48	52
Norway	27	28	30	30	34	26	22	25	28	29	27	32	--	--
Salvador	--	--	--	--	--	57	57	46	50	57	50	56	63	--
Scotland	61	57	59	70	62	62	64	66	64	58	62	64	64	70
Sweden	29	27	25	26	32	27	27	25	23	24	26	--	--	--
Switzerland	--	54	56	51	57	56	55	51	46	48	43	44	37	--
U. S. birth-reg. area[2]	61	62	66	92	74	80	68	66	67	66	65	66	65	69
Uruguay	22	29	32	30	23	34	33	27	27	25	25	30	22	24

Figures compiled from official sources by the Federal Children's Bureau.

[1]Provisional.

[2]The United States birth-registration area expanded from 10 states in 1915 to 44 states in 1928.

*See also page 842.

tistics as possible from those communities where records have been kept or studies made of the number of maternal deaths occurring in midwives' practice and to compare maternal mortality rates of countries and states having large or small percentages of births attended by midwives.

United States Compared with Europe.—In all of the countries of Europe, except Scotland, more than half of the births are attended by midwives, the number being 80 per cent and more in most of them. In the United States the percentage of births attended by midwives and "others" is estimated to be not over 15 per cent. Yet every country in Europe for which statistics are available has a lower maternal mortality rate than the United States except Scotland which surpassed the United States' rate in 1928 by having one more death per 10,000 live births. The position of the United States is altered but little if the colored population with its extremely high maternal mortality rate is eliminated and figures for the white population only used in the comparison. In only one year since the establishment of the birth registration area has the maternal mortality rate for the white population of the United States been less than 60 per 10,000 live births. (Table I.)

Comparison of the States in the United States.—In comparing States with high and low percentages of births attended by midwives two points should be borne in mind: (1) that figures on births attended by midwives frequently include births attended by persons who are not midwives at all, such as members of the family and neighbors acting in an emergency through failure of the family to provide a doctor or the inability to secure one; (2) that of the women who serve as midwives only a small number are trained in midwifery.

In the United States birth registration area we find that in 1929 there were 13 states with maternal mortality rates higher than 80 per 10,000 live births. Mostly these are the southern states with their large colored population. These states also have a large percentage of births attended by so-called midwives. While the ignorant and untrained colored "mammy" undoubtedly contributes her share to this high rate, other factors which contribute to high mortality rates from all causes among the colored population and proportionately to maternal mortality are too well known for us to conclude that the high rates in the South are due per se to the high incidence of so-called midwife deliveries. In fact, statistics from three states given later in this report show a considerably lower maternal mortality rate among the colored women attended by midwives than among those attended by physicians. (Table II.)

Aside from these states we find that in 1929, 12 of the 46 states in the birth registration area had a maternal mortality rate of less than 60 per 10,000 live births. Among these twelve we find New Jersey

TABLE II. MATERNAL MORTALITY IN THE U. S. BIRTH REGISTRATION AREA 1929, AND PERCENTAGE OF TOTAL BIRTHS REPORTED BY MIDWIVES AND OTHERS NOT PHYSICIANS 1925

STATE	MATERNAL MORTALITY RATE PER 10,000 LIVE BIRTHS[1]					PERCENTAGE OF TOTAL BIRTHS REPORTED BY MIDWIVES AND OTHERS NOT PHYSICIANS[2, 3]
	LESS THAN 60	60 to 70	70 to 80	80 to 90	90 AND ABOVE	
Alabama					99	35
Arizona			78			10
Arkansas					91	30
California	57					8
Colorado				86		10
Connecticut	54					12.8
Delaware		63				25
Florida					95	30
Georgia					93	(4)
Idaho		61				0
Illinois		68				20
Indiana			70			5
Iowa	56					1
Kansas		68				3
Kentucky		66				20
Louisiana					99	34.5
Maine			72			(5)
Maryland	55					19.2
Massachusetts		67				0
Michigan		66				5.5
Minnesota	43					15
Mississippi				89		(4)
Missouri			73			10
Montana				84		7
Nebraska		61				2
Nevada		63				10
New Hampshire			75			(6)
New Jersey	55					34
New Mexico				87		(4)
New York	56					10
N. Carolina				84		32
N. Dakota	55					10
Ohio		67				35
Oklahoma				82		2
Oregon	59					2
Pennsylvania		65				(4)
Rhode Island			79			5
S. Carolina					114	50
S. Dakota		(Not in birth registration area)				5
Tennessee				87		10.3
Texas		(Not in birth registration area)				6.2
Utah	49					10
Vermont			77			0
Virginia			71			32.4
Washington		62				5.3
W. Virginia	58					10
Wisconsin	51					7.7
Wyoming		63				2

[1]Source: U. S. Bureau of the Census.

[2]Source: U. S. Public Health Service Bulletin No. 184, Health Departments and Provinces of the United States and Canada, p. 77. (It has been necessary to use these estimates for 1925 as no later ones are available. It is suggested that this table be considered in connection with the one on pp. 7a-7k.)

[3]The following were not in the birth registration area in 1925: Ala., Ariz., Ark., Colo., Idaho, Ga., La., Mo., Nev., N. Mex., Okla., S. C., S. Dak., Tenn., and Texas. All but two states, S. Dak., and Texas, have now been admitted. It is possible that the increase in the number of registered births in these states has changed these percentages somewhat.

[4]Data not furnished.

[5]A "few" by midwives.

[6]"100 per cent reported by town clerk." (There is one practicing midwife in the state, however.)

and Maryland with 18 and 19 per cent respectively of births delivered by midwives and others, and Oregon and Iowa both of which have no midwife problem. And again in looking at the States with rates between 60 and 70 per 10,000 live births we find Kentucky and Delaware where midwives attend 18 and 25 per cent respectively of the births, with Indiana where midwives attend 5 per cent of the births and Nebraska which "has no midwife problem." In the group of states with rates between 70 and 80 per 10,000 live births we have New Hampshire, which reports one midwife in the state, and Vermont which reports none, with Virginia which has over 4,000 midwives who attend nearly one-third of the births in the state.

It is recognized that factors other than the attendant at birth affect the maternal mortality rate of a community and the above statistics are presented only to show that they do not point to the midwife as the determining factor in the high maternal mortality of any particular place.

Statistics From Communities and Special Studies.—The data secured from health departments and other agencies on the work done by midwives and from studies made of maternal mortality according to attendant at birth give us more satisfactory ground for conclusions relative to the midwife's effect on maternal mortality. In only a few studies have such statistics been assembled but enough material is available to permit of some conclusions as will be seen from the following:

Pennsylvania: In Pennsylvania a program of midwife supervision has been carried on in three sections of the state for varying periods of time, Philadelphia, Pittsburgh, and a group of counties in the coal region. Statistics are given below for these three communities.

Philadelphia: The program of midwife education and supervision was begun in Philadelphia in 1914 under the State Bureau of Medical Education. The midwives practicing there at that time were of various nationalities, speaking many languages and dialects. With the exception of a few women who were graduates of foreign schools, most of them were ignorant of any real obstetric knowledge and of elemental personal hygiene as well. The Bureau began by requiring all midwives to register and secure a license. At first the requirements were made very lenient but were gradually increased until at the present time applicants for license are required to be graduates of an approved school of midwifery. Four midwife inspectors, physicians with special training in obstetrics, were appointed whose duties were to instruct and supervise all midwives. Each midwife is required to send to her inspector a report of each case within forty-eight hours after delivery, and the inspector is required to visit the patient within a few days after delivery. If any abnormality occurs during labor the midwife must call a physician.

Statistics on the cases attended by the midwives have been kept. From 1914 to September, 1930, they attended 90,926 confinements. Of this number 1,780 were delivered by physicians and in 1281 cases physicians were called in after delivery, leaving a total of 87,865 women attended only by a midwife. All deaths occurring in the entire group, however, are considered here as deaths occurring in the midwives' practice. There were 91,074 live births (including plural births) in the group of cases, and 77 maternal deaths or a rate of 8.5 per 10,000 live births. There were 18 deaths from sepsis or a rate of 2 per 10,000 live births. The lowest maternal mortality rate ever attained in the State of Pennsylvania is 61 per 10,000 live births and the death rate from puerperal sepsis has varied from 24 to 27 per 10,000 live births during the last six years. In general about one-fourth to one-third of the deaths from sepsis follow abortions, and in order to eliminate this factor from the comparison we may reduce the state rate for sepsis by one-third, making it 16 to 18 per 10,000 live births during the last six years as compared with 2 per 10,000 live births for the group of cases attended by midwives.

The place of delivery is of interest, only 34 deliveries taking place in a hospital. One hundred and twenty-four women were sent to the hospital after delivery but in a number of these cases this was due to the fact that the baby needed hospitalization rather than the mother.

Pittsburgh: The midwife program in Pittsburgh was begun at about the same time as the one in Philadelphia. The midwives are required to pass an examination given by the Bureau of Medical Education and they are supervised by nurses on the staff of the City Bureau of Child Welfare who visit each case delivered by a midwife. During the seven-year period from 1924 to 1929 midwives attended 7,707 women. In 39 cases physicians were called in to make the delivery. There were but 4 maternal deaths in the entire group or a rate of 5 deaths per 10,000 cases.

Group of Ten Counties: In 1922 an intensive program of midwife education and supervision was begun in four counties by the Preschool Division of the Pennsylvania State Department of Health. This work was later extended to and is now being carried on in ten counties. The midwives are instructed in class groups and visited in their homes by physicians on the staff of the Preschool Division. State nurses in these counties visit all women who are attended by midwives and the doctors investigate deaths of mothers or young infants that occur in the midwives' practice. Statistics have been kept and all deaths occurring among patients attended at any time by a midwife have been charged against the midwives' practice even though the case may have been taken over and the delivery conducted by a physician. There have been 30,364 confinements attended by midwives in this

group of counties from 1925 to 1929 inclusive, with 56 maternal deaths or a rate of 18 per 10,000 confinements.

New Jersey: In a report made in 1922 by Dr. Julius Levy, Director of the Bureau of Child Hygiene of Newark, New Jersey, and Consultant to the State Bureau of Child Hygiene, he gave statistics for that city for the five-year period 1916-1921 showing that the maternal mortality rate per 1000 live births among cases delivered by midwives had varied from 1.0 to 2.2 during the five years, while that for doctors in private and hospital practice had ranged from 6.0 to 8.7

In the annual report of the New Jersey Bureau of Child Hygiene for 1928 some figures are given on the number of maternal deaths occurring in the midwives' practice. These figures show that of 400 puerperal deaths occurring in the state in that year, midwives were in attendance in only 17 instances or 4 per cent of the total. However, they attended 18 per cent of the births occurring in New Jersey in 1928. The midwives of New Jersey are probably the best trained and most highly organized state group in the country.

Maryland: In a study of maternal deaths in the State of Maryland, exclusive of the city of Baltimore for the three years 1927-1929 information concerning each case was secured by a physician who personally interviewed the person who had been in attendance on the case. There were 241 maternal deaths in the three years, 65 of which were associated with an interruption of pregnancy before the seventh month, leaving 176 deaths taking place after seven months' gestation. Of the 176 cases only 8 deaths had been attended by a midwife alone. There were 23 cases where there had been no attendant, an attendant other than a midwife, or where a physician had followed a midwife or other attendant. In 145 or more than four-fifths of the cases a physician had had entire charge.

States Included in Children's Bureau's Maternal Mortality Study.— In a study of maternal mortality made in 13 States in 1927 and in the same states and two others in 1928, by the Federal Children's Bureau in cooperation with State Boards of Health and at the request of State Medical Societies, data were secured relative to the attendant at birth. Preliminary figures on this subject have been made available to the committee.

In order to eliminate the factor of abortions which figure largely in physicians' practice, only those deaths following gestation of seven months or over are included in Tables III and IV. From one of these it will be seen that out of 4903 women dying after seven months' gestation or over, for whom the attendant at birth was reported, only 11 per cent were attended by midwives. All cases in which the midwife was in attendance regardless of whether she was followed by a physician or intern are included in this figure.

TABLE III. ATTENDANT AT BIRTH, BY STATES; WOMEN WHO DIED FROM PUERPERAL CAUSES AFTER A PERIOD OF 7 MONTHS OR MORE GESTATION IN 13 STATES IN 1927 AND IN 15 STATES IN 1928. (U. S. DEPARTMENT OF LABOR, CHILDREN'S BUREAU)

STATE	WOMEN WHO DIED FROM PUERPERAL CAUSES AFTER A PERIOD OF 7 MONTHS OR MORE GESTATION													
	TOTAL	ATTENDANT AT BIRTH												
		REPORTED												NOT REPORTED
		TOTAL	TOTAL		MIDWIFE ALONE		FOLLOWED BY PHYSICIAN OR INTERN		PHYSICIAN OR INTERN		PHYSICIAN FOLLOWING OTHER		OTHER OR UNATTEND	
			NO.	PER CENT	NO.	PER CENT	NO.	PER CENT	NO.	PER CENT	NO.	PER CENT	NO.	PER CENT	
Total	4,965	4,903	550	11	357	7	193	4	4,065	83	47	1	241	5	62
Alabama	859	838	202	24	165	20	37	4	602	72	2	(1)[1]	32	4	21
California[2]	310	305	12	4	6	2	6	2	259	85	5	2	29	10	5
Kentucky	428	424	69	16	49	11	20	5	323	76	6	1	26	6	4
Maryland	255	252	30	12	10	4	20	8	209	83	6	2	7	3	3
Michigan	809	799	18	2	8	1	10	1	743	93	12	1	26	3	10
Minnesota	334	334	16	5	11	3	5	2	299	90	—	–	19	6	—
Nebraska	200	199	6	3	2	1	4	2	182	91	1	1	10	5	1
New Hampshire	79	78	—	—	—	—	—	–	75	96	—	–	3	4	1
North Dakota	106	105	7	7	5	5	2	2	88	84	3	3	7	7	1
Oklahoma[2]	190	184	10	5	8	4	2	1	166	90	2	1	6	3	6
Oregon	96	96	1	1	1	1	—	–	88	92	1	1	6	6	—
Rhode Island	113	110	1	1	1	1	—	–	101	92	2	2	6	5	3
Virginia	566	566	161	28	83	14	78	14	362	64	6	1	37	7	—
Washington	169	168	4	2	2	1	2	1	157	93	—	–	7	4	1
Wisconsin	451	445	13	3	6	1	7	2	411	92	1	(1)[1]	20	4	6

[1]Less than 1 per cent.
[2]Figures for 1928 only.

TABLE IV. MORTALITY AMONG MOTHERS AFTER SEVEN MONTHS OR MORE GESTATION, BY ATTENDANT AT BIRTH IN STATES INCLUDED IN THE CHILDREN'S BUREAU STUDY REPORTING TEN PER CENT OR MORE OF BIRTHS ATTENDED BY MIDWIVES, 1927-1928[1]

STATE	LIVE BIRTHS REPORTED BY PHYSICIANS	DEATHS OF WOMEN ATTENDED AT CONFINEMENT BY PHYSICIANS	MORTALITY RATE PER 10,000 LIVE BIRTHS	LIVE BIRTHS REPORTED BY MIDWIVES	DEATHS OF WOMEN ATTENDED AT CONFINEMENT BY MIDWIVES[2]	MORTALITY RATE PER 10,000 LIVE BIRTHS
Four states	327,030	1,496	46	98,373	479	49
Alabama	93,843	602	64	37,176	202	54
White	78,625	389	49	6,381	34	53
Colored	15,218	213	140	30,795	168	55
Kentucky	100,312	323	32	18,763[3]	86[3]	46
Maryland	54,812[4]	209	38	9,152[4]	30	33
White	45,665	150	33	5,288	15	28
Colored	9,143	59	65	3,860	15	39
Baltimore	27,397	114	42	4,370	13	27
White	21,667	75	35	3,760	11	29
Colored	5,730	39	68	970	2	—
Counties	27,415[4]	95	35	4,422[4]	17	38
White	23,998	75	31	1,528	4	—
Colored	3,413	20	59	2,890	13	45
Virginia	78,063	362	46	33,282	161	48
White	67,683	248	37	10,569	49	46
Colored	10,380	114	110	22,713	112	49

[1]Source: Live births from correspondence with states. Deaths from Children's Bureau study.
[2]Includes deaths of women attended by midwives alone and by midwives followed by physician.
[3]Includes midwives and others.
[4]Includes four births for which color was unknown.

Table IV, giving the mortality rates according to the attendant at birth for the mothers who died in the four states included in the study in which midwives attended 10 per cent or more of the births, shows lower rates for the midwives in two of the states and lower rates for the physicians in two. In the three states for which it was possible to compute rates separately for white and colored women, the mortality for colored women was lowest for the cases attended by midwives. In considering the figures for these four states it should be borne in mind that with few exceptions the so-called midwives are untrained women, and that therefore the figures are not so valuable as a basis of conclusions as are the ones from Pennsylvania and New Jersey.

The above statistics show very favorable maternal mortality rates in the practice of midwives in general, and remarkably low rates for the mothers attended by trained and supervised midwives.

NEED FOR MIDWIVES IN THE UNITED STATES

The question next arises, is there a need or demand for midwives in the United States? In answer to this the committee found that as nearly as can be estimated there are approximately 47,000 women in this country who at least act in the capacity of midwives; only a small proportion of them are trained women; some of them attend only two or three cases a year, but others have a large practice. Altogether, nearly 15 per cent of the births in the United States are attended by midwives and others not physicians. By states, the percentage of births attended by midwives varies from none in some states to between 40 and 50 per cent in others. In general the states with the highest percentage of midwife deliveries are the southern states with their large colored population. For the most part, the midwives who serve the colored population are untrained women. These people have to use untrained midwives because trained ones are not available and doctors cannot be afforded even if they are available. The colored midwives have shown themselves eager and willing to avail themselves of such educational advantages as have been offered to them in the way of theoretical class instruction by State Boards of Health.

The problem is not confined entirely to the colored population: in many states midwives attend large numbers of white women at confinement. The reasons for this vary. Custom, sparseness of the population and scarcity of physicians in some states, and economic conditions all play a part. As one State Health Officer in a sparsely settled southwestern state said in speaking of the situation in his state: "We must accept the midwife and attempt gradually to improve her practice. Fewness of physicians and distance people live from them make it impossible for a large part of the population to

employ them, because (1) they are not to be had at any price, and (2) because people cannot pay the fees. A trip of 100 miles at a dollar a mile plus regular obstetric fee would consume more than the entire cash income of a family for a year in many cases. The midwife in this state is an institution dating from prehistoric times. Any attempt to curtail her activities arouses a storm of protest from the Spanish-speaking population which comprises about one-half of the total."

CONCLUSIONS AND RECOMMENDATIONS

After considering all the data which have been collected in this study and paying particular attention to the needs in certain sections of the country the committee has the following recommendations to make:

1. The ultimate solution of the problem of good obstetrics lies not in the midwife but in developing a sufficient number of doctors who are well trained in the fundamental principles of obstetrics. The development of such doctors is a direct responsibility of the medical schools.

2. At the present time the midwife is a necessity; she cannot be eliminated in some sections, and every effort should be made by the profession to improve her as rapidly as possible. This improvement should be brought about by local effort. Inasmuch as the midwifery need seems greatest in those states where the economic status is low, aid is needed and would hasten the relief of present conditions.

3. Recognized institutions for the training of midwives, which would assure preliminary education and proper training must be established if present conditions are to be permanently improved. The establishment of such institutions is a local and not a state responsibility. They should be located in sections needing the services of midwives and where they will not conflict with the obstetric teaching work of medical schools. It is felt that midwives trained in or near their own communities will be more likely to stay in those communities where their services are needed.

4. Inasmuch as the need for midwives seems greatest in those communities having a large colored population, it would seem wise to establish institutions for the proper training of colored midwives in the South where a wealth of controllable clinical material is available.

5. There should be provision for postgraduate courses for keeping midwives up-to-date.

6. The committee commends the good work that has been done in recent years by many State Boards of Health and feels that such work should be continued under the same supervision.

7. The committee appeals to the individual State Boards of Health to develop standards for midwife education, supervision, and control. Such standards would regulate the requirements for licensure and

insure adequate supervision by obstetricians, qualified midwives, and public health nurses with midwifery training. These problems are local and can best be solved by local administration.

8. It is suggested that midwifery training would offer the colored trained nurse a larger field of activity.

MATERNAL AND EARLY INFANT CARE*

By John Osborn Polak, M.D., Brooklyn, N. Y.

(Professor of Obstetrics and Gynecology of the Long Island College Hospital and Medical School)

AFTER a year's survey of the conditions existing in the registration areas of the United States and a review of the maternal and fetal mortalities, your committee is convinced that obstetrics as practiced by the rank and file of doctors, is of very mediocre quality. In the United States there is no nation-wide system of midwifery as is found in some European countries where a large percentage of the normal deliveries are conducted by carefully trained midwives working with or under the supervision of thoroughly trained obstetric specialists. The bulk of the deliveries in our country are done by the general practitioner and in some localities by the midwife, both of whom in most instances are inadequately trained.

The committee investigated maternal and fetal mortality in hospitals and private institutions for maternity care, as compared with deliveries in the home. *Our study shows that during the past ten years there has been a gradual but consistent increase in the number of women entering the hospitals for their confinement.* This applies to both urban and rural districts. More and more women who are nonresidents apply for care and delivery in urban institutions, likewise, many cases of dystocia occurring in the rural districts are transferred to city hospitals for delivery.

Prior to 1915, there were relatively few institutions which were properly staffed or equipped to take care of maternity cases, and only a negligible number offered any form of prenatal service or gave antepartum advice. At the present time prenatal clinics are being conducted by Health Bureaus; Red Cross Chapters; Maternity Centers; Welfare Societies and District Nurse Associations, many times without regard to the importance of trained personnel or consecutive obstetric attendance.

Your committee attempted to ascertain the difference in the mortality rates between white and negro women and the causes for this difference. According to the report of the Census Bureau, of the United States Department of Commerce, the maternal mortality rate

*Report of Subcommittee II, on Prenatal, Maternal, and Early Infant Care.

in the birth registration areas in states having more than 2000 colored births annually for the years 1915 to 1928 inclusive, among the whites was 65.25 per 10,000 live births; while the rate among negroes was 116.58 per 10,000 live births. In certain states as Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, New York, Oklahoma, South Carolina, Tennessee, Virginia, and West Virginia, the mortality among the colored due to pregnancy and childbirth was twice that among the whites. It is evident therefore that the negro population presents a definite obstetric problem. The negroes are poorly housed and poorly fed, have had fewer educational advantages; the incidence of rachitis and syphilis is many times greater than is found in the white woman, and gonorrheal infection among the blacks, particularly in the urban districts, is more prevalent. These factors contribute to difficult labor, puerperal infection, prematurity, and stillbirths, making both the maternal and fetal mortality rates higher.

Our third problem was to ascertain what proportion of births occurred in hospitals, what provisions were offered by hospitals for the segregation of maternity cases, and whether this segregation was done by the allocation of special wards, floors or pavilions. This data has been difficult to collect. Few of the State Bureaus have any information to give on these subjects. Your chairman instituted correspondence with a number of hospitals throughout the country and the replies show that segregation and special personnel is the rule.

In connection with this part of our study we made an effort to learn if there was any difference in the maternal mortality rate in special hospitals staffed by a trained personnel as contrasted with that in general hospitals which take maternity cases and segregate them in special wards. It was impossible to obtain sufficient statistical data bearing on this subject to draw definite conclusions, however, the mortality rates at the Chicago Lying-In; the Methodist Episcopal Maternity, Brooklyn; the New York Lying-In and the Boston Lying-In, all of which include an outpatient service, are lower than the general mortality rate of the locality and of the general hospital. Likewise, it is shown that cases attended by specially trained personnel show both a lower morbidity and mortality rate than those attended by the general practitioner in a hospital or in a home.

Our fourth problem was study of the provisions offered for prenatal care and antepartum instruction and the effect which such care has had upon maternal and fetal mortalities. It is only during the last fifteen years that *any concerted effort has been made to develop by women a demand for antepartum care and better obstetric service and to educate the physician to give this service.* Widespread propaganda for prenatal instruction is doing much to better the condition of the

prospective mother and give the unborn child a better chance. Odd as it may seem, notwithstanding this advance in preventive medicine, just as many women die of sepsis; a few less from toxemia and convulsions, but actually more from operative delivery, shock and hemorrhage, all of which demonstrates that prenatal care, no matter how thorough, is but a link in the obstetric chain which is broken by faulty or careless methods of delivery.

The United States is not alone in its high maternal and fetal mortality; England and Wales have the same problem. The recent publication of the report for the Ministry of Health by Janet Campbell, focused attention on the risk to life which attends childbirth. She shows that the mortality in England and Wales, is not only *absolutely high, but is relatively high* when compared with the rate of many other European countries. The analysis as to the causes of death serves to show that the majority of fatal cases could be controlled by preventive methods. This is a striking illustration of the necessity of better prenatal and intranatal care. In England and Wales, taking the group of married women during the reproductive age (fifteen to forty-five, there were 22,256 deaths of which number 3,456 were due to some accident or diseases of childbearing, in other words, more than one-seventh of the total death rate in this period of woman's life was attributable to causes directly or indirectly due to childbirth. Furthermore, it must be remembered that for every woman who actually loses her life in labor, *there are four or five whose health is permanently impaired by the effects of a difficult labor.*

During the last fifty years the female death rate from all causes has been considerably lowered by preventive medicine. On the other hand, in striking contrast the mortality from conditions incident to pregnancy and childbirth in England, Wales and the United States has shown very little decline *and the mortality from sepsis has remained stationary for the past fifteen years.* Deaths due to other maternal causes have also shown an increase, but with it all, there is a marked reduction in the infant mortality rate. Another observation which applies alike to England and Wales is, that the maternal mortality rate from all causes is highest in the rural areas, in contrast the *rural rate in registration areas in the United States is always lower.* These statements may be explained by the fact that there is relatively less puerperal fever in the rural districts than there are disasters from other accidents of labor. Again, as might be expected, noninterference with labor would operate in reducing the amount of sepsis but would oftentimes prevent timely aid in cases of mechanical difficulty.

In New York State the gain which has been made by prenatal care, antenatal propaganda, better, cleaner and more conservative obstet-

ries in the rural districts, is offset in the hospitals of the urban areas by a great increase in operative deliveries and the complications which follow.

Our final effort included an investigation as to the number of women delivered by midwives and how these midwives were trained, licensed and controlled, for it was apparent to our committee from all of the reports to which we have had access, that *the midwife is and will continue to be a factor in any national plan of organized obstetric care* which we may suggest or adopt.

PRESENT STATUS OF OBSTETRICS IN THE UNITED STATES

1. Provisions for prenatal care
2. Provisions for delivery
   (a) In hospitals
   (b) In the home
3. Nursing facilities and follow-up

1. *Prenatal Care.*—It is conceded to be the right of every prospective mother to have prenatal care for herself and for her unborn child. If we accept the standards of the Obstetric Advisory Committee of the New York Obstetrical Society and Children's Bureau, we find that few clinics offer complete antenatal care and instruction. By minimum Grade A care, it is understood that the woman has supervision by either a private physician or a maternity clinic from the fifth month on through the ninth. This attention should include periodic blood-pressure readings, monthly and later weekly estimation of the urinary output, uranalysis, monthly and weekly weight records and a complete physical examination including the teeth, tonsils, thyroid, lungs, breasts, heart, abdomen, pelvis, and extremities, as well as pelvic mensuration and abdominal palpation to determine the size and the position of the fetus.

Our investigation shows that there are numerous health agencies conducted by Bureaus of Child Hygiene; Welfare Societies; the Red Cross; Maternity Centers and religious organizations which are not properly staffed. Their personnel lack trained medical skill, consequently these clinics fall short in the type of antenatal care given. Heart lesions are missed or misinterpreted, anemias are overlooked, blood Wassermanns and blood chemistry are not taken; rapid increase in weight is not appreciated and the significance of mouth hygiene is neither taught nor practiced in the majority of clinics which claim to give antepartum instruction. Notwithstanding these very evident and serious omissions, it must be admitted that some good has come from educating the woman in diet, in the hygiene of pregnancy and the importance of having medical advice early in

pregnancy. Most women have learned the advantages of emptying the intestinal tract, the value of increased elimination by the copious ingestion of water, the importance of urinary examinations, blood-pressure readings; the dangers of vaginal bleeding, headache and edema, all of this knowledge has definitely lowered the incidence of eclamptic convulsions and to a considerable extent has forewarned the attendant of impending toxemia. Prenatal care has not diminished the incidence of toxemia, but it has prevented the toxemia from becoming a serious factor and has saved a large number of women and their babies by appropriate treatment and the prophylactic interruption of pregnancy.

Most of the large city hospitals both general and special which admit maternity cases have attached prenatal clinics from which their booked cases are admitted. *Study of the statistical results of such clinics where the attention is consecutive, is in striking contrast with the results obtained in clinics where there is no control of the disposition of the patient during labor.*

In the study which is being conducted by a special committee of the New York Academy of Medicine to investigate the circumstances of each puerperal death in the City of New York during a three-year period, it has been found that about 10 per cent of the fatal cases have had what is classed as Grade A care. In these groups the mortalities can be charged to poor obstetrics and poor obstetric judgment, not to a fault in the prenatal care, but indirectly to the lack of consecutive attendance.

In answer to a questionnaire sent to 1104 Health Centers, 543 stated that they were giving prenatal care. Forty-four gave only home visits. In 26 of these clinics, prenatal instruction was given by a physician, or a physician and nurse, or a physician and social worker. Among the 587 replying to the questionnaire, 231 held general conferences conducted by a physician; 162 conferences were conducted by the nurse. The majority of expectant mothers made their first visit between the fifth and seventh month of pregnancy. A complete physical examination was made in 300 and 280 had pelvic measurements recorded. All of the women applying had the urine analyzed and blood pressures taken at least three times and in a few instances as many as eight. Blood Wassermanns were done in 347 clinics and omitted in 191 clinics. Home visits were made by a nurse or a nurse and a social worker, a nurse and student, or a nurse and physician in 498 of the localities cared for by these clinics; while postpartum visits after six or eight weeks were made in 309 clinics. In answer to the inquiry, "Are prenatal services given to only those who are unable to employ a private physician?"; out of the total 587 replies, 233 answered YES and 289 NO, the remaining 65 did not report on this question. The woman received instruction concerning

nutrition in 503 of the clinics reporting. It is evident from the answers to this questionnaire that there is a concerted effort to instruct women in the hygiene of pregnancy, routine urinary examination, blood-pressure readings, the importance of blood Wassermann test and a complete examination by a physician. Less than 10 per cent of these agencies make any attempt to provide consecutive care at delivery and about half follow up the case with postpartum visits.

What may be accomplished in the conscientious management of the maternity patient through the cooperation between doctors, nurses, and associated hospitals during the prenatal, intranatal and postnatal periods, is well illustrated in the report of the Visiting Nurse Association of Minneapolis for 1929: 4,395 cases were studied, 55 per cent of the deliveries occurred in the home; 45 per cent were delivered in hospitals by physicians. Of those cases delivered in the home, 53 were attended by physicians or students, under the direction of a physician, and but 2 per cent were cared for by midwives. A visiting nurse was present in 26 per cent of the cases attended by physicians and of the total, 75 per cent received prenatal care from the Visiting Nurse Association. Fifty-one per cent received both prenatal and postnatal care.

Comparing the maternal death rates in this study with the mortality death rate in the City of Minneapolis, the accomplishment is most striking.

In Minneapolis the total births during the years 1925, 1926, 1927, 1928, were 36,940. The maternal deaths were 216 or 5.8 per 1000 births, of which only 140 were over five months gestation, giving a maternal death rate of 3.7 per thousand births. Contrasted with this in the 4,113 births having service by the Visiting Nurse Association, physician and midwife, as stated above, there were but 9 maternal deaths, *a rate of 2.2 per 1000 births.* The stillbirth rate also shows the advantage of antenatal care with a nurse and physician cooperating, being 36.7 per 1000 for the city as a whole, and 33.8 per 1000 for the 4,113 cases having visiting nurse and medical supervision.

The deduction from this study is that the earlier the discovery of complications in pregnancy the better chance the physician has to make proper plans for delivery. Cooperation between the nurse and the doctor in home care gives excellent results.

That prenatal care saves babies cannot be questioned, and that it reduces the number of infant deaths in the first month, also must be accepted. In support of this statement, comparison of the infant death rate in the first month based on figures also taken from the Bureau of Vital Statistics, City of Minneapolis, and the record of the Visiting Nurse Association, shows that in 1925, 1926, 1927, and 1928, the rate for infants under one month in Minneapolis was 37.3 per 1000 live births; under one week 25.9; under one day 19.5, as compared with

visiting nurse cases in which prenatal care was given, the infant death rate under one month was 17.4; under one week 10.8; under one day 6.2.

Causes of Maternal Mortality.—More primiparae than multiparae in the United States die during pregnancy and childbirth. Septic poisoning, toxemia, and hemorrhage (antepartum and postpartum) are responsible for 66 per cent of these deaths. In addition to these recorded causes it may be assumed that a certain proportion signed out as embolism or intestinal obstruction, may be added to the septic group, and a number of those deaths attributed to shock and myocardial failure are indirectly due to hemorrhage. All of our studies show that there is an increased incidence of operative deliveries in primiparous births, these subject the woman to tissue trauma, blood loss and infection, a combination which few women can combat. Furthermore, toxemia is actually more common in primiparae than in multiparae and, therefore, adds its toll to the grand total.

The method of delivery has an important bearing on mortality rates. This is well illustrated in a study of 370 primiparous deaths in Massachusetts, analyzed by the State Board of Health. Of this number 101 were due to sepsis and 99 to toxemia. The sudden deaths from embolism, shock and heart trouble, 78 in all, make up the next group, while hemorrhage is credited with 23. *Among these 370 deaths, 116 followed cesarean sections, 106 had been delivered with forceps, and 11 were breech extractions, a total of 233 operative deliveries.* Two hundred and twenty of the babies lived, 88 were stillborn, and 53 died immediately after birth; 103 were premature. Rather a shocking mortality with very few babies to show for it.

This and similar reports from New York, St. Louis, Cleveland, Baltimore, and Philadelphia show that surgical and manual delivery is taking a heavy toll, particularly when these mortality rates are compared with thousands of cases which have had complete consecutive antepartum and intrapartum care delivered by in- and out-patient maternity services where more attention is paid to genital asepsis and the physiologic mechanism of labor.

The mortality rates in the United States do not compare favorably with those of Scandinavia, Germany, or Italy, where the trained midwife is a part of the government organization. Rates from 2.3 to 3.6 per 1000 live births make our average of 6.5 look culpable. We who are spending millions of dollars in preventive medicine can learn much from Denmark and Sweden in the care of the maternity patient and her baby.

California, New York, Kentucky and North Carolina are doing pioneer work for bettering these conditions. California has its prenatal and maternity care well organized and the woman well educated as to the value of hospitalization at the time of her delivery. Of the 81,498 births recorded in 1929, 40,060 were confined in maternity hos-

pitals, 2792 in maternity homes, making a total of 52.80 per cent of the maternity cases which were hospitalized. The mortality rate per 1000 for hospital deliveries was 5.38; maternity homes per 1000 deliveries, 1.1 per cent. This is a remarkable record when it is considered that the hospitals and the maternity homes are "open hospitals." 38,646 women were confined at home; 7.20 per cent of the total number of births. The mortality rate in home deliveries was 5.3 per 1000 and the total rate for the state was 5.22 per 1000. In California the maternity homes and hospitals are under State supervision and comply with rigid requirements as to equipment, cleanliness, and personnel. That the importance of segregation is understood by both Lay and Medical Boards is shown by the fact that of the 249 hospitals having maternity services, 38 have separate buildings or pavilions and 178 are on separate floors, segregated from the main hospital.

The record of the Maternity Center Association of New York City affords another example of what may be accomplished by supervision and education, even though many of the patients were delivered by general practitioners, students, and midwives.*

The Bureau of Child Hygiene of California has carried on an active propaganda for the woman as well as for the education of the doctor. *Prenatal care is given by the private physician who also gives the intranatal care.* There are no free beds in California hospitals connected with the clinics except the County hospitals which have prenatal clinics attached and admit patients from these clinics. This, therefore, is a good cross-section of what can be done by the patient and the physician cooperating; for only 3,070 cases out of the total 81,498 births were delivered by midwives, this is but 3.7 per cent of the total births.

Stillbirths and Neonatal Deaths continue in a high ratio. An analysis of their causes has been unsatisfactory, as relatively few autopsies are made, hence the pathologic cause of death is seldom known. The stillbirth rates throughout the country range from 2.1 to 6.8 per cent; while the neonatal rates range from 1.9 to 4.1 per cent. In an analysis of a large series of births, the outstanding cause of infant mortality in babies under one month, is prematurity. The next largest number are credited to intranatal injury or hemorrhage.

In New York State a study of 668 completed records of the antenatal clinics which have been conducted by the Bureau of Child Hygiene of the State Board of Health, show a total of 647 live births and 21 stillbirths, a stillbirth rate of 31.4 per 1000 births. This compares favorably with the stillbirth rate of the State, exclusive of New York City which is 35.2 per 1000; while the neonatal rate is 30.9 per 1000. Fifty per cent of the neonatal mortality was due to the accidents of labor. Further analysis shows that a large proportion of

*This report was published in the December, 1930, issue of this JOURNAL.

the premature births result from pregnancy toxemias and syphilis, both of which may be materially reduced by the early institution of proper treatment.

Dental Hygiene in Prenatal Clinics.—Our study has failed to show except in isolated instances that there is any dental hygiene either practiced or taught in the prenatal clinics of this country. This applies in fact to many of the clinics associated with the larger maternity services and medical schools. Most of the supervision and advice, if given at all, comes from the physician without proper consultation with the dentist. The chief dental lesions which occur during pregnancy are: (a) an increased tendency to dental caries which is explained by the calcium deficiency so common during pregnancy; (b) and an increased tendency to gingivitis. *At no period in the woman's life is dental care so necessary.* All dental operations which are indicated should be carried out except those which require prolonged general anesthesia. Ordinary extractions have little if any effect upon pregnancy and should be done when necessary. Gum infection should be treated, as focal infection is a constant producer of toxins, and it has been shown that some toxemias are dependent upon suppurative foci. A suitable tooth-building diet high in calcium content is of great value. Finally, there should be a closer cooperation between the physician and the dentist in the management of the mouth and teeth of the pregnant woman.

Another subject into which we have made inquiry is the disposition of the postpartum case after leaving the hospital; the opportunities offered unmarried mothers or deserted wives to care for their babies; what agencies assist in their rehabilitation, and also what facilities are available for mothers and babies who are syphilitic or have gonorrhea. To determine the answer to these questions, 1295 questionnaires were sent to hospitals, maternity homes and nurseries (a copy of which is appended to this report). To these, we received 542 returns which on analysis show that but 177 institutions have Social Service Departments, 208 give prenatal care to homeless women, 369 simply offer care for the delivery and 164 attempt through their Social Service Departments to find work for the unmarried mothers and the deserted wives and to assist in their rehabilitation. Altogether, 219 have the cooperation of other agencies to carry on this work, but only 116 have facilities for the care of babies while the mothers are earning a living. Two hundred and fifty-four institutions do nothing for either the mother or the baby after the first ten or twelve days of the puerperal period. Forty-five teach mothers housework, sewing, laundry, practical and child nursing, and 2 offer commercial courses which may serve as a means to the woman's support. The University of Michigan Maternity Hospital, alone, has facilities for the homeless mother both before and after her delivery. Even less

facilities are offered to the syphilitic mother or the woman who is suffering from acute gonorrhea. It is the rule to refer these patients to the venereal clinic and have them treated there. Some of the large hospitals, notably the Cook County Hospital, the Long Island College Hospital, the Philadelphia Lying-In and the Boston Lying-In, have antisyphilitic clinics for the babies. In Chicago, Miss Prentice, Director of the Social Service Department of the Cook County Hospital, states: "There are no facilities for mothers and babies who have gonorrhea with but one exception, the Salvation Army Home where they have five beds for such cases, but they prefer to take those cases before delivery and carry them through their confinement."

Nursing Facilities and Follow-Up.—The nursing facilities offered for the care of maternity cases are:

(1) The specially trained graduate
(2) The trained nurse
(3) The practical monthly nurse
(4) The trained nurse midwife
(5) Midwives graduated from foreign schools and a few from our own schools of midwifery
(6) The friendly neighbor.

The State Bureaus of Child Hygiene and Maternity Care in many states offer some nursing facilities, though in most instances this work is one of education, not bedside nursing. As a whole the nursing of maternity cases has not been developed and is inadequate. Likewise, the Visiting Nurse Associations and Maternity Center groups in the large cities, offer a limited amount of maternity nursing of good quality but this is too thinly spread over the areas which they attempt to cover. In the rural districts, the County or Village Health Department usually maintain a small nursing staff, more for instruction than for actual nursing service. One point which our investigation has brought out is, that relatively *few graduate nurses practicing in the large cities will take care of home maternity cases on a twenty-four hour basis.* The facilities for follow-up are lacking except in a few postnatal clinics which are operated in connection with some of the large university maternity services. No organized effort of follow-up has been developed in this country.

COMMENTS

The survey of this subcommittee has shown that there is no nation-wide program in the United States and has confirmed its belief that, while American obstetrics in certain urban centers is comparable to obstetrics practiced anywhere in the world, *that as a nation our women are not receiving the best care.* Apparently we are passing through a transitional period from surgical radicalism with its heavy toll to

physiologic conservatism, where by careful antepartum study; instruction in the hygiene of pregnancy; the intelligent interpretation of the laboratory findings in the toxemias; a broader knowledge of the physiologic mechanism of labor and the employment of strict surgical asepsis at delivery, maternal mortality will be reduced. To achieve this result the present standard of inadequate and casual prenatal work must be raised by the organization of prenatal clinics which are staffed by a trained personnel. It will not be difficult to do this in our larger cities in the clinics connected with the large university hospitals which are well endowed; *but giving adequate prenatal attention in the sparsely populated districts will always be a difficult proposition until the State, the physician and the patient appreciate the advantages and accept their individual responsibilities.* The small rural hospital which is the medical center of the community, could well establish both a free and a pay clinic for the instruction of the prospective mother. Each one of these institutions covers considerable territory and their facilities in this day of the automobile can be utilized without difficulty. Furthermore, all of these hospitals are open hospitals, and the physician who gives the care could have access not only to the records but to the hospital facilities. *Only consecutive and intelligent rational obstetrics at the time of delivery followed by postnatal observation for a period of two months after childbirth, will ever raise our obstetrics to proper standards.* Mothers' classes for antenatal instruction could be conducted in these centers and in this way the public would obtain a better knowledge of its responsibilities to the woman at childbirth. The laboratory equipment of these small hospitals could be used to examine the urine, determine the blood chemistry, and make Wassermann tests, while a nurse could keep the weight charts and make the blood-pressure readings. All of this data could be indexed and be available to the physician. This could be done at small cost with benefit to the hospital; (1) because it would establish a contact; (2) and would take away from the woman the fear of a hospital and educate her in the value of preventive medicine. The physician would be better trained because of the demand for better service by both the woman and the hospital.

More opportunities for graduate training in obstetrics should be offered the general practitioner by the several university clinics. This training should include advanced means of diagnosis, pelvimetry, fetometry, simple laboratory methods and offer periods of observation for the study of the proper management of the several stages of labor, for in the last analysis, it is the general practitioner and usually a busy one, who will attend the majority of obstetric cases. *The tendency for early interference before the passages are completely prepared could be minimized by the development of the obstetric nurse*

midwife. A nurse having had special maternity training in the delivery room, capable of observing the fetal heart, making rectal and abdominal examinations to determine progress; should be attached to the personnel of every busy practitioner who cares for maternity cases. Surgical cleanliness and the avoidance of trauma must always be the watchword of every man or woman who practices obstetrics.

Your committee is convinced that *the time has come to establish a nation-wide obstetric program which should have the backing of the Federal Government, the State and County Health Departments and the endorsement of the national obstetric groups and welfare agencies.* It is conceded to be the right of every prospective mother to have proper prenatal care. She should also be provided with the means and the machinery to have a safely conducted delivery. For years the National Government and the States have provided sanitorial treatment for the tuberculosis patient, how much more important it is to have a healthy child born of a healthy mother, and the woman restored to her economic value in society for the care of this and her other children. Surely no nation-wide project deserves greater support.

Any nation-wide obstetric program must plan for the care of four distinct groups of patients:

1. *The clinic patient* who receives her care in the clinic with its consecutive prenatal, intranatal, intrapartal and postpartal services; completely organized with a medical, dental, nursing and social service personnel. This group is already well taken care of in the larger cities by the maternity hospitals and the general hospitals with completely organized maternity services. Thirty-eight of our medical schools carry on prenatal clinics in connection with their maternity services and thirty-three have already established postpartum clinics for the follow-up of these patients after they are discharged from the hospital; for the study of involution changes; the correction of displacements and the management of late infections.

2. *The Rural Group.*—This group lives in the rural communities of the sparsely settled districts and includes the large negro population of the South and the Southwest where no adequate care of any type is given to the lying-in woman. In his group the State Board of Health through its Children's Bureau and the County Health Officers, must cooperate in the maternity program. A survey of the country shows that there are comparatively few districts in which there are no rural hospitals. Your committee believes that county hospitals of the rural districts, as well as city hospitals supported by taxes, should be equipped to protect mothers and babies in every station of life. In addition to the cooperation from the State Board and the County Health Officer, the small privately owned hospitals should be subsidized by the State and so organized as to form a center equipped to give consecutive

obstetric care. By this, we mean; prenatal, intranatal, intrapartum, postpartum and postnatal attention. Besides subsidizing the hospital the State should maintain a full-time Health Officer in the county in which the hospital is situated.

In the Southern States having both white and colored population, there must be not only segregation of the maternity cases, but provision of the segregation of the white from the colored. With the county hospitals and the privately owned hospitals in the rural districts offering facilities for the care of maternity patients; prenatal clinics of modern efficiency and postpartum clinics could well be part of the care offered; while the Public Health nursing staff could follow up with instructive visits in the home.

In California an instructive visit in the home is given to all mothers and babies cared for at the hospitals; this visit is free and educational in character. On the average the work is covered by two visits; the first is made the day after the patient leaves the Maternity. Nursery adjustments, such as bed, bath and a formula with a working schedule for the care of the child and care of the home, cover the instruction.

The maternity program with the necessary publicity should be begun at the marriage license bureau where every applicant should receive simple printed literature of the minimum standards of prenatal care, the importance of trained medical attendance during labor and information relative to the importance of periodic health examinations. Through the County Health Officer the maternity program of the State Board of Health can be presented to the local physicians and to the residents of the community at the County Medical Societies and lay organizations of women and the work stabilized through the permanent health centers (the rural hospitals). Each of these hospitals taking patients should offer advice as to clothing, shoes, layette, and nursery equipment, thus making a demand on the department stores for better service. All of this service should be free to private and house cases and will serve as an advertising medium for the medical prenatal service. Private physicians should be invited and encouraged to serve in these clinic centers, but the Health Officer should be the responsible head and be responsible for the type of work done in the clinic.

It must be admitted that the midwife or the trained nurse midwife is a necessity in the rural districts, particularly in the South and the Southwest, but she must be properly educated and trained. Nurse midwives, both white and black, could be trained in these clinic centers to do simple, clean midwifery and encouraged to serve the community in this type of work. It is particularly important that native women be given the opportunity of this training, as they in all likelihood will be more content to work among their friends and neighbors in the districts in which they live. Such midwife training should be regulated and financially supported by the State if other means are not forthcoming.

3. *The Great Middle Class* which makes up the majority of women who do not care to go to free clinics, is entitled to proper prenatal and intranatal care just as much as are their less fortunate sisters. These women will always be confined in the home, in a maternity home, or in an open hospital by the general practitioner or the young specialist. These women must be provided for and it is this class who must be educated by conferences, mother-craft clubs, etc.; to the benefits of modern obstetric care. Likewise, it is the general practitioner who by being given greater opportunities (graduate instruction) will be better equipped to take care of such cases. That this can be done is demonstrated by reviewing what has been accomplished in the State of California where the practitioner gives the prenatal care and delivers his patient in the home or in a maternity home. The records of the latter show that the maternal mortality per 1000 live births is only 1.1. The maternity homes in California are under State supervision, not only as to their building and equipment, but as to their personnel and their results.

4. *The Well-to-Do Patient* also needs education. She is in a position to have the best, could she know what is the best. Relatively few of this class outside of those living in the large cities are delivered in hospitals. There is, however, a gradual increase of hospitalization in almost every state. When we speak of hospitals, we mean the institution manned by a trained obstetric staff. This may be an open or closed institution, but to keep the work at a high standard there must be an impartial review of the results obtained, for unless this is the case, the hospital is not as safe a place for delivery as is the home, for it gives false security to the untrained surgically inclined obstetrician.

At the present time we can suggest no means of improving the obstetric service rendered to this class of women except by educational propaganda to the public and better education and regulation of the men who are practicing obstetrics; by a review of their mortalities by the Health Officer, and in larger cities by a group representing the American Board of Obstetrics. The flagrant abuses such as operative interference on flimsy indications, the employment of questionable methods of procedure and careless unsurgical attendance, could be brought to the attention of the offending individual and a better quality of work would result.

In conclusion your committee recommends:

1. The establishment of a nation-wide obstetric program which has the support of the Federal Government, the State and County. State Maternity Hospitals, especially those in connection with Medical Schools and urban hospitals may also require financial support. This means subsidizing county and privately owned rural hospitals as obstetric centers.

2. That greater opportunities be offered the general practitioner by the University Medical Schools for graduate instruction in obstetrics.

3. That national schools of midwifery for the white as well as for the negro woman be established in connection with the rural hospitals in those districts in which the midwife is a necessity. In this plan the midwife shall be responsible and supervised by trained obstetricians in their respective districts, as is the plan in Scandinavia.

4. That the obstetric care does not terminate when the patient is discharged from bed, therefore, we recommend that postpartum and postnatal clinics be established for the poor and for those in moderate circumstances and that the physician be schooled in the importance of postpartum care. If the childbearing woman is, as we all agree, a national asset, she is entitled to national recognition and national support.

Committee:

Elizabeth M. Gardiner, M.D.
Adelaide Brown, M.D.
Charles E. Galloway, M.D.
Calvin R. Hannah, M.D.
Edward C. Lyon, M.D.
Arthur M. Mendenhall, M.D.
Hillard E. Miller, M.D.
Miss Helen C. Peck
Alice N. Pickett, M.D.
E. Blaine Rhobotham, M.D.
Percy W. Toombs, M.D.
George H. Wandel, D.D.S.
Miss Minnie E. Bea
Miss Jessie F. Christie, R.N.
John O. Polak, M.D., *Chairman.*

FACTORS AND CAUSES OF FETAL, NEWLY BORN, AND MATERNAL MORBIDITY AND MORTALITY*

By Hugo Ehrenfest, M.D., St. Louis, Mo.

THE Report herewith presented includes a total of 25 reports which analyze and discuss a large number of different factors and causes of fetal, newly born, and maternal morbidity and mortality.

The appended list of authors, and titles of their contributions, clearly indicates the great variety of factors investigated by men believed to be specially equipped by experience and personal interest to handle their respective problems, but this list fails to convey any adequate idea of the impressive amount of reliable information and of valuable suggestions offered.

Of necessity this report is limited to a brief presentation or even only mere mention of particularly important views and conclusions in regard to causes for the present maternal, fetal and neonatal mortality and morbidity, and to their possible elimination.

A tremendous loss of life occurs during the first few months of intrauterine existence. The mortality during the six months preceding viability apparently surpasses the total mortality from that time to the age of sixteen years. Available statistics establish for all the civilized world a continuously rising incidence of abortions as the direct result of a steady increase of willful interruptions of pregnancies. Useful statistics, however, in regard to either spontaneous or intentional abortions, or of maternal mortality and morbidity connected with them are not obtainable.

All attempts to enforce systematic reports of abortions to health officers have failed. Similar concealment and falsification exist in reporting the deaths of mothers due to abortion. This probably is the inevitable result of the fact that induced abortion is not only considered immoral by the community but is punishable as crime. In modern Russia both these factors have been eliminated by legalization of abortion under certain conditions, and from this viewpoint recent Russian statistics prove of interest and value. In the Ukraine district alone, the number of recorded abortions amounted in 1925 to approximately 89,000, but within the next two years they rose to 150,000 and 242,000 respectively. They were legally and thus expertly performed, according to the claim of the Russian authorities, with a maternal mortality of practically zero. With reasonable accuracy a similar, remarkable increase of abortions has been established as well in

*Report of Subcommittee IV, on Factors and Causes of Fetal, Early Infant, and Maternal Morbidity and Mortality.

Germany, the ratio between abortions and term births in 1927 being calculated to amount to approximately 1:1.

No data concerning abortion incidence are available for the United States, as recently stated by the Children's Bureau. Investigations made by this Bureau for the years 1927 and 1928, however, among others revealed the important facts, that about 25 per cent of all maternal puerperal deaths followed abortions, and that such deaths after illegal abortion were caused by septicemia in 91 per cent of the cases. The Children's Bureau estimates that of all abortions in this country 50 per cent are criminally induced, 37 per cent spontaneous, and the remaining 13 per cent therapeutic. One familiar with existing conditions will admit that a considerable number of the so-called therapeutic and very many of the spontaneous abortions actually belong in the group of criminal abortions.

Efforts to reduce this appalling waste in early fetal life are bound to meet with serious obstacles. Prenatal care has helped, and will help more if better and earlier care is sought by expectant mothers. Church and state for a very long time have been vainly fighting against criminal abortion. Among the causes which today induce so many women to interfere with an existing pregnancy there can be recognized at least two which cannot be eliminated, namely, a reduced infant mortality and changes in social-economic conditions. Whether perfection of contraceptive means and their wider usage will actually decrease the number of induced abortions seems debatable, if not actually doubtful.

Much, however, can and must be done to reduce the present high maternal mortality and morbidity connected with abortions. Routine hospitalization of all these patients would greatly facilitate their adequate medical management and eliminate dire consequences in many instances.

Next to abortion as cause of maternal, fetal and neonatal mortality and morbidity rank diseases which either precede impregnation or appear as complications in the course of pregnancy. Special investigations and studies made by members of this committee deal with the following diseases more commonly observed among pregnant women: Syphilis; tuberculosis; cancer; anomalies of kidneys, heart, certain endocrine glands, blood and teeth; the acute infectious diseases; parasitic infections; toxemia. On account of its close relation to conditions belonging in this group, in this connection mention is made of an investigation concerning the effect of pelvic, therapeutic irradiation on subsequent offspring. As far as possible the manifold interrelations between pregnancy and such diseases were systematically discussed from the following viewpoints: How is pregnancy likely to affect the usual course of the disease and the prognosis as to life and future health of the mother? What effect can the disease be

expected to exert on continuation of the pregnancy to term, on the fetus, the newborn, or the child later in life? How shall the complicating disease be treated, how labor, delivery and the puerperium managed? How can the development of such diseases in the course of pregnancy be prevented? In cases of disease already existing, when is a warning against marriage desirable, under which conditions is it advisable to prevent temporarily or permanently an impregnation, and when justifiable to interrupt a pregnancy?

A few of the facts developed in these studies deserve specific quotation.

The responsibility of discovering syphilis in pregnant women largely rests with the general practitioner. The fact that a negative Wassermann does not exclude the presence of this disease should be more generally known. It is probable that a cross-section of the incidence of syphilis among pregnant women in the United States amounts to about 10 per cent, but is much higher among negroes. Syphilis does not increase the immediate maternal hazard. Proper treatment, instituted early, will practically in every instance prevent the baby from having the disease.

There is now a definitely growing opinion, particularly among experts in tuberculosis, that the heretofore rather general claim of a deleterious effect of an intervening pregnancy on an existing pulmonary tuberculosis is not based on acceptable facts. Indeed, marked improvement of the disease becomes the rule, when the pregnant woman receives proper treatment during pregnancy, labor, the puerperium, and for a considerable time afterward. Therefore, any routine or even frequent interruption of the pregnancy for the assumed benefit of the mother is not any longer justifiable.

The satisfactory solution of the important problem of efficient dealing with tuberculous, pregnant women thus rests mainly with a sufficient supply of hospital beds for such patients. A recent investigation showed that in this country the situation in this respect is quite far from being satisfactory; that in the United States a tuberculous woman unjustly is penalized for having become pregnant; that improvement of such regrettable conditions depends less upon an increase of beds or special equipment than upon a change in the viewpoint of the directors of such institutions. There might be required a better and wider distribution of such hospitals and centers, or a more carefully supervised transfer of delivered women to such places. Surely the tuberculous pregnant woman should not be left to the haphazard and inadequate care she has all too frequently received in the past.

The most important single factor in the tuberculosis problem is the recognition of the lesion very early in pregnancy. Prenatal clinics fully appreciate this fact, general practitioners and the patients them-

selves, however, only to a very limited degree. Women with signs of active tuberculosis should be warned against pregnancy and if they nevertheless conceive should immediately receive adequate treatment for their disease, preferably in a sanitarium or its equivalent.

Cancer is one of the rarer complications of pregnancy. If in a state where cure seems possible the disease should be treated without any consideration of the pregnancy. When the malignancy is advanced, efforts must be directed concerning a possible saving of the child. A patient, seemingly cured of a malignant disease, should not be permitted to go through a pregnancy.

It is regrettable that so far no uniformity of nomenclature has been established for the various types of renal disease encountered in pregnant women. It is evident that each patient presents a specific problem and that frequently it is impossible to determine the character and extent of kidney involvement until several weeks or months after delivery.

Acute nephritis occurs, but only rarely it can be differentiated from the more common acute pregnancy toxemia, variously designated as preeclampsia or eclampsia. Also only rarely it is possible to differentiate clinically between the various forms of chronic nephritis.

Of serious import is the relative frequency of chronic nephritis following eclampsia, preeclamptic toxemia and the so-called albuminuria of pregnancy.

When the kidneys already are damaged, or become so during pregnancy, the added strain of gestation in many cases lowers the kidney reserve to such a degree that the patient's welfare becomes seriously jeopardized. In instances of chronic nephritis, pregnancy should be prohibited and in many cases the interruption of pregnancy becomes necessary. All cases of toxemia must be carefully observed for at least one year after delivery before another pregnancy could be allowed.

In patients who had previously one kidney removed the remaining kidney must be subjected to a careful study before a pregnancy could be permitted.

Disturbances of pregnancy to which the general title of toxemia is commonly applied are about as far as ever from final solution with respect to incidence, etiology and treatment. Recent researches in regard to causation have been largely along chemical lines. The most satisfactory scheme of treatment, in general, represents adherence to symptomatic, conservative as contrasted with radical, operative measures except under certain conditions. Earlier recognition of premonitory symptoms under proper prenatal care beyond any doubt has resulted in the reduced incidence of eclampsia.

Like the kidney also the heart during pregnancy is called upon to augment its function. Physiologic alterations in the circulatory sys-

tem during gestation at times make it difficult to draw an exact line between them and truly pathologic changes. The already damaged heart stands less chance to respond efficiently to the additional demands made upon it by pregnancy and particularly during the second stage of labor. The chief objects of management of cardiac patients are early recognition, and prevention of a circulatory breakdown. This usually can be accomplished but of the one per cent of pregnancies ending fatally about one-fifth is caused by heart disease.

No attempt at delivery should be made while the patient is acutely decompensated. A thorough trial with medical treatment must precede any surgical action. The effect of such treatment as a rule is as satisfactory in the pregnant as in the nonpregnant woman.

If a cardiac woman during pregnancy exhibits the signs of circulatory failure, a decline in cardiac efficiency as the result of childbearing is to be expected. In a subsequent pregnancy an exaggerated insufficiency is likely to prove fatal. A heart that has broken down once should never again be exposed to the strain of pregnancy. Cases with prompt and complete restoration of circulatory balance have a better prognosis.

Delivery always should be made as short and effortless as possible.

Premature expulsion of uterine contents occurs in a high percentage of cases. A short second stage of labor seems of great advantage not only to the mother but as well to the baby.

A factor to be reckoned with is the effect on the cardiac patient of the burden of an enlarged family. This factor alone in some instances might make permanent sterilization desirable.

With present methods of dealing with functional anomalies of the thyroid gland interruption of pregnancy becomes but rarely necessary. Hypothyroidism can be effectively managed with the administration of thyroid extracts. In some of the hyperthyroid patients compound solutions of iodine might prove not entirely sufficient and then a partial thyroidectomy has to be done. Under these conditions the pregnant woman as a rule is enabled to carry through pregnancy with reasonable expectancy of health and of a normal living child born at term.

There is no evidence that children of hyperthyroid mothers have abnormal thyroids; it seems, however, that children of untreated hypothyroid mothers show a higher incidence of colloid goiters in infancy.

In the presence of hyperthyroidism medical advice must be strongly against pregnancy.

With the introduction of insulin in the treatment of diabetes a remarkable change to the better has come in the heretofore grave prognosis for both mother and fetus. Successful treatment of diabetes, whether patient is pregnant or not, depends upon meticulous con-

trol of insulin administration, diet, activity, etc., and for this reason the advice to be given to a diabetic woman in regard to a pregnancy in its last analysis really is determined by external conditions. When, however, in a preceding pregnancy in spite of adequate treatment the outcome was unfavorable, it seems logical to forego any further attempts.

Exhaustion during labor should be guarded against in these patients and to that end operative delivery with the patient in good condition is probably preferable to a long-drawn-out labor.

As far as the pregnant woman is concerned only the chronic myeloid leucemia holds any practical interest. Many women suffering from this disease have been known to pass through two and even more labors. Nevertheless, these women must be strongly warned against pregnancy. The customary treatment with irradiation has its definite drawbacks in view of the probable harmful effect on the fetus. Interruption cannot be expected to prove useful since any operation on a leucemic patient admittedly implies considerable risks.

Slight anemias are relatively common especially in the later months of pregnancy; severe anemias, due to various causes, on the other hand, are infrequent. The maternal mortality in cases of pernicious-like anemias is exceedingly high. Severely progressive anemias are apt to be accompanied by fetal death or premature labor.

Patients suffering from severe anemias must be warned against pregnancy, at least until blood examination shows a return to normal. Every patient of this kind should know the particular danger of closely repeated pregnancies. The wisdom or necessity of artificial interruption of pregnancy in far advanced cases of anemia may well be questioned.

Splenectomy may be a life-saving procedure in cases of acute purpura hemorrhagica at any state of gestation and in some rare instances of hemolytic jaundice, though these latter patients usually stand pregnancy fairly well. Splenectomy during pregnancy is usually followed by an undisturbed labor and puerperium.

All the known infectious diseases might accidentally complicate a pregnancy. Most of them under these conditions are prone to run a more serious course; to carry a larger mortality, and to interfere with the progress of pregnancy when associated with marked toxemia or high elevation of temperature. Some of them distinctly increase the chances of puerperal infection. Interesting in this connection is the possibility of a passive, usually only transitory, immunization of the fetus as the result of transition of antibodies through the placenta. Such transmission of antibodies also occurs by way of the mother's milk.

The many different forms of parasitic diseases in general cause many abortions or premature labors, but with the exception of hookworm do not constitute an unusual hazard for the infected mother.

An effort should be made to diagnose such a complicating parasitic infection correctly and early with the aid of an expert so that appropriate treatment can be started at the earliest moment. This gives the fetus the best chance.

Malaria produces abortion, but quinine given to the patient actually prevents it. Even the malaria inoculation treatment of paresis can be successfully administered to pregnant paretic women. Dengue is a most serious complication of early pregnancy. Prenatal infection of the fetus with hookworm can occur through migration of larvae. Ascaris may cause not only severe symptoms but serious complications of pregnancy.

The entire problem of parasitic infection is one of great portent especially for the Southern states. It has so far not been accorded the study of its relation to pregnancy it fully deserves. For that part of our country fecal examinations should become a part of antenatal routine.

With the wider use of pelvic irradation in the treatment of gynecologic diseases naturally a question has been raised in regard to a possible harmful effect upon a subsequent child. Most exhaustive studies and investigations made by one member of the committee demonstrate beyond all reasonable doubt that preconceptional irradiation is harmless as far as the future child is concerned. In contrast, postconceptional application of radium or x-ray in larger doses for therapeutic purposes to the pelvic region implies a great risk of damage, especially of the fetal central nervous system. Such treatment should always be preceded by curettage. Patients must be warned against exposure to possible impregnation when the application of the rays is done in intervals. If radiation is absolutely required during pregnancy or impregnation accidentally occurs during the course of treatment, the uterus should be emptied promptly.

Short exposure for roentgenograms during pregnancy most probably is entirely free of any harmful effect on the fetus, granted that this procedure is not too often repeated, especially in early pregnancy.

Of recognized importance in the causation of mortality and morbidity of both mother and infant are traumatic lesions and infections sustained in the course of labor and delivery.

Competent antenatal examination and continued observation in many instances will enable the attending physician to foresee difficulties likely to arise from pelvic anomalies and abnormal fetal presentations. In respect to the latter, timely recognition of a breech presentation and its correction by means of an external version, gently done without anes-

thesia, must be accorded first place among efficient prophylactic measures in the protection of the child.

The intimate relation of the injury of the child in birth to his immediate or early death, and to a later physical or mental deficiency at present is generally appreciated. Intracranial damage as the most frequent type of such injury naturally plays the most important rôle in the causation of stillbirth, neonatal mortality and infant morbidity. Concentration of medical interest on this one type of injury in the minds of many has made the general term "birth injury" almost synonymous with the term "intracranial injury." Thus the significant fact becomes obscured that birth injuries, sustained more often in artificial deliveries but not by any means rarely in normal spontaneous labors, comprise outside of cranial and intracranial damage also fractures of the vertebral column, clavicle, jaw, upper and lower extremities; palsies of the brachial plexus or facial nerve; more or less severe eye injuries including complete avulsion of the eyeball, include severe injuries to abdominal organs particularly in the course of brusque manipulation during resuscitation, and many other forms of possible traumatic lesions.

Parallel with an increase of our knowledge concerning immediate and late effects of such injuries runs a corresponding decrease in the number of diseases and anomalies of infants, commonly termed as congenital. Many of them we find to have been actually acquired in birth.

Responsibility for any of these injuries does not necessarily rest with the obstetrician but their occurrence certainly to a considerable extent is influenced by his judgment and skill. This is particularly true in respect to all artificial and operative deliveries. Even when done by experts under most favorable conditions they augment the risk to the mother and with the sole exception of cesarean section as well as to the baby.

Advocates of more radical obstetrics seem to disregard or to minimize the inevitable dangers of such practice. It seems unthinkable that the conscientious obstetrician would increase maternal risks in the hope of compensation by an entirely problematic improvement of future chances for the baby.

Artificial delivery is becoming increasingly frequent, especially in hospital practice, chiefly as the result of four factors: (1) A sense of safety, often false; (2) the almost universal use of anesthetics in response to the demands of the patients; (3) an exaggerated idea of the value of the infant's life and of the value of operative delivery in conserving this life; and (4) the often false idea that artificial delivery is easier on the mother, incidentally an idea which complies with the present demand of women for a short labor.

Cesarean section is the safest form of delivery as far as the child is

concerned but experience shows that women once subjected to this operation almost invariably resort extensively to contraceptive measures. Thus efforts to save babies under exceptional indications by means of this operation as a matter of fact in the end result in a reduction of their number.

As far as the use of the forceps in general practice and especially in the home of the patient is concerned, objection hardly could be raised to the assertion that a reduction of the present high incidence of damage to mother and child can be secured only by a limitation of the number of forceps extractions.

Pain relief of the parturient is desirable, but the problem is essentially different from anesthesia necessary for all operations. Relief given to women in labor must be absolutely free of all possible harm to either mother or child. Of the various drugs, for this purpose administered by mouth, rectum or subcutaneously, the overwhelming majority interfere with uterine activity and many pass into fetal circulation. Among the various types of inhalation anesthesia, nitrous oxide with oxygen probably is the safest and most satisfactory, with ethylene and oxygen ranking next. The latter also proves valuable for deeper anesthesia required for operative deliveries but under certain conditions can be advantageously replaced by block or local anesthesia. With every type of analgesia or anesthesia during labor the fetal heart must be carefully observed. In this respect inhalation anesthesia in contrast to drug anesthesia offers the great advantage of allowing prompt cessation of administration in the interest of the fetus, when alterations in the fetal pulse rate suggest beginning distress.

Asphyxia of the newborn, that is, any immediately noticeable anomaly of respiration, in a very large number of instances is due to some damage of the respiratory center. Every seemingly asphyxiated infant, therefore, for its best advantage should be regarded as one presumably intracranially damaged. All resuscitation efforts must be gentle. Brusque manipulations not only tend to aggravate already existing lesions but by themselves are responsible for various types of often serious traumatization. Whenever an intracranial injury is suspected 20 c.c. of parental blood should be injected hypodermatically as a useful prophylactic measure.

If definite conditions justify the artificial start of labor, the artificial rupture of membranes particularly when preceded by the administration of castor oil and quinine, according to a recent investigation reported to this committee, represents the safest and most satisfactory procedure at present known. However, stress must be laid in this connection on the many evident dangers to the infant resulting from premature birth.

An investigation made through questionnaires by a member of the

committee showed that some entirely satisfactory standard technic in dealing with the newborn baby is in force in every larger maternity of this country.

In my own opinion, however, every hospital and private record of labor and delivery should not only describe with sufficient detail all phases of the process but should as well contain exact references to any anomalies in the condition and immediate behavior of the baby. With increased frequency now the attending obstetrician is asked for such precise information by pediatricians, neurologists and orthopedists, years later consulted concerning certain diseases or defects possibly the result of birth injuries.

If it is true that in this country abortions account for 25 per cent of the entire puerperal mortality, and septicemia for 91 per cent of all criminal abortion deaths, then septic infection following full-term labor certainly does not play as important a rôle in puerperal maternal mortality as we generally are led to believe.

Better prenatal, intranatal and postnatal care nevertheless would hold out promise for further reduction of this mortality and beyond doubt would eliminate a great part of puerperal morbidity.

There is no agreement as to what constitutes puerperal morbidity and even the standards based upon certain temperature levels leave out many cases in which the temperature never reaches 100° F. but nevertheless are morbid as evidenced by a thrombotic process or subinvolution. A decided step forward would be made by general acceptance of a precise definition of the term "puerperal morbidity." Such a definition, however, would have to include such details as the manner (mouth, rectum or axilla), time and interval for ascertaining the temperature.

Puerperal morbidity statistics as now offered from various sources are incomparable with each other and of limited practical value. An investigation made by means of questionnaires revealed that large maternities in this country, even with standards approximately the same, report figures for this morbidity which vary anywhere between 7.6 per cent (the lowest reported) and approximately 30 per cent. The actual puerperal morbidity in the whole country thus cannot even be estimated.

It seems superfluous to enter here into a discussion of well-known local sources of infection and fever. Among extragenital causes of fever, first place apparently is held by respiratory infections, followed next by uncomplicated pyelitis. The figure for breast infections in obtained reports probably is relatively too small on account of the frequent start of this trouble after the tenth postpartum day. Of various surgical complications, usually representing acuter exacerbations of old processes near the genital sphere, can be mentioned salpingitis, parametritis, bartholinic gland abscesses, appendicitis, tonsillary abscesses

and cholecystitis. Appendicitis in this connection is of particular importance. Whenever a definite diagnosis of appendicitis can be made during pregnancy, it is best to remove the organ. Any of the medical conditions causing fever might occur during the puerperium. All cases of fever during the puerperium should have the advantage of careful physical examination by an internist.

The incidence of infections of the genital tract is increased by all vaginal manipulations, and particularly, by all types of operative delivery. It seems possible that all the advances in medical knowledge have been almost lost to the parturient woman through too great a recourse to instrumental delivery. The average woman in this country at present seems less concerned with the dangers incident to operative interference than with the desire to pass through labor as quickly and comfortably as possible.

Hospitalization of parturient women is constantly increasing all over this country and in the ten largest cities now ranges between 56 and 85 per cent of all live births. This has many decided advantages but as well such disadvantages as exposure to cross infection, and, as already mentioned, the often false feeling of security of the operating room. This latter factor undeniably has led to much unnecessary operating with its resulting trauma and increased morbidity and mortality. The operative rate for confinements amounts to 15 per cent in Scandinavian countries and England, in this country to between 65 and 80 per cent according to 20 answered questionnaires.

Allowing doctors in the community to care for their own patients in the hospitals, provided that they rigidly adhere to the established technic, in general has proved advantageous. More and better equipped maternities with a better trained personnel, reduction in operative deliveries, prevention of abuse of analgesia and anesthesia, better education of mothers in respect to the advantages of good antenatal care and the inevitable dangers of satisfying their desire for painless and short labor represent the best prophylactic measures now available for reduction of the present maternal mortality and morbidity from inadequate intranatal care, trauma and infection.

True morbidity in the puerperium not necessarily manifests itself by fever. Retained parts of secundinae may cause hemorrhages, at times of a serious nature, and will favor infection and subinvolution. Unattended damage to soft parts becomes responsible for various troublesome affections. Breast infections can be avoided by proper care. By means of a questionnaire a clear view was obtained in regard to prevailing opinion as to what constitutes proper postpartum care. The bladder should never be allowed to become overdistended. An increasing number of obstetricians in this country are dispensing with the

tight abdominal binder. Certain exercises during the lying-in period are advantageous. More than one local examination should be made after labor.

This particular report concludes with the statement that for the best interest of the patient another conception should not take place at least within the next six months and that, therefore, at the time of the last postpartum examination advice should be offered for its prevention.

It seems convenient to summarize at this point opinions freely expressed in many of the reports in regard to the advisability or necessity of preventing pregnancy when the woman's health is impaired.

No objection seems possible to the assertion that young women suffering from certain forms of cardiac, renal, endocrine, infectious, malignant or mental diseases should be advised against marriage. If the patient seeking medical advice is married, the warning against pregnancy and particularly a definite decision in favor of temporary or permanent prevention of impregnation will in each individual case depend upon the character and extent of the disease and inevitably, at least in part, upon careful consideration of other conditions among which the patient's social-economic status will carry considerable weight.

Expressed views concur in the belief that earlier and wider use of prenatal examination, better understanding of the complex effects of pregnancy and disease on each other, advance in delivery methods and technic among other factors have steadily decreased the number of diseases and of individual cases in which interruption of pregnancy can be done with any justified hope of thereby materially improving the patient's chances for life or later health. This thorough modification in time-honored opinions is best illustrated in regard to pulmonary tuberculosis.

Such a change toward conservatism when it comes to choosing between two serious dangers to the mother, continuation of pregnancy to term or immediate interruption, only emphasizes the importance and necessity of an effective prophylaxis against pregnancy. In certain instances the advantage of permanent sterilization will be easily recognized and, indeed, in several states this procedure is legally required even for conditions which in the opinion of authorities not always justify the operation. There remains another, fairly large group of women whose physical condition leaves no doubt in the mind of the consulted physician that its further deterioration could be reasonably or definitely expected from impregnation within a given time. It seems logical that he should suggest and, on request, should give to them information in regard to known contraceptive methods but always with the warning that no method is known to the medical profession which is fully dependable. From this viewpoint contraception must be regarded as an item of great importance in the desirable elimination of factors which admittedly play an important rôle in maternal mortality and morbidity.

In a country with so large a population of Negroes, Indians and Chinese it seemed possible that certain racial superstitions and customs in connection with pregnancy and labor might tend to increase mortality and morbidity of mother and child. Three investigations made along these lines furnished no significant support for such an assumption. The undeniably higher maternal, fetal and infant mortality and morbidity among Negroes is determined to the largest extent by the relative frequency of contracted pelves and the notoriously high incidence of venereal infections, and in part as well by lack of cleanliness and utter ignorance concerning the first principles of hygiene or the advantages of good natal care and of adequate nourishment of the infant. Their many superstitious procedures as a whole are fairly harmless. Satisfactory or full information in regard to various Indian tribes was hard to obtain. In general, conditions in the various reservations are not by any means bad and health nurses occasionally praise the skill of some of the older, absolutely untrained native midwives. One of the reporting physicians ventures the opinion that in relation to obstetrics the "medicine man" of the tribe probably does no more harm than the faddist in the city. The younger generation of Indian women readily accept the advantage of better maternity care whenever offered to them. The same holds true for the Chinese in San Francisco, where a thorough and competent survey showed that mortality and morbidity for both mothers and babies compare most favorably with those reported by the Health Department for the entire city.

In the course of these investigations it became evident that the statistics as at present published by the Bureau of Census, by state and city health departments, and from other sources fail to offer any really clear and satisfactory insight into the actual and immediate causes of the death of either mother or newborn infant. A special study, therefore, was made of this specific problem.

Since establishment of the Birth Registration Area, with some degree of accuracy rates are computed between infant and maternal mortality based upon the total number of live births. These rates are useful for certain observations and deductions but are not comparable with similar rates of foreign countries and not even with rates of various parts of the United States. Considerable progress will be made in this respect by general adoption of the International Classification of Causes of Deaths and of Joint Causes.

It is, however, particularly desirable that a general agreement be reached as to what items should appear on the standard certificates of birth and death, especially as related to maternal and early infant mortality.

It might reasonably be expected that through certain changes in these certificates as now used, and through enforcement of exact answer to

each question on them, specific and detailed information will be obtained which is indispensable for any systematic effort on the part of obstetricians to reduce or eliminate factors and causes which today contribute to mortality and morbidity of mother and infant in connection with pregnancy and labor.

The following recommendations are made:

1. Efforts must be increased to provide better prenatal care to more women. In general, only early diagnosis allows adequate treatment of a disease which complicates pregnancy and is likely to harm mother or baby.

2. A warning should be disseminated that compliance with the insistent demand of women for shorter and more comfortable labors inevitably implies risks both for mother and baby.

3. Interference with pregnancy or labor should be limited to well-defined indications.

4. In view of the fact that abortions are responsible for a large part of maternal mortality and particularly for later maternal morbidity, at least all febrile cases of abortion should be hospitalized.

5. Appropriate changes should be made in official Birth and Death Certificates so that more and preciser information can be obtained concerning the actual causes of death of either mother or infant in connection with pregnancy and birth.

THE BASIC SCIENCES AND THEIR RELATION TO MATERNAL AND FETAL PROBLEMS*

By Leslie B. Arey, Ph.D., Chicago, Ill.
(Professor of Anatomy, Northwestern University Medical School)

THE findings and implications of human genetics and eugenics must be considered carefully in any program dealing with the welfare of mother and offspring since they send ramifying roots into the fundamentals of many problems involved.

Infant mortality studies begin with ova which may be nonviable, too weak to unite with the sperm, or incapable of implanting after union. Egg and sperm may be incompatible, leading to death of the zygote, early or late; this is supposedly the cause of a large part of early spontaneous abortions, but the catastrophe may be delayed sufficiently to result in a stillbirth, early infant death or a viable cripple. Studies of such lethal and sublethal genes may yield somewhat to analysis in many instances, but these results offer little hope for control, since fatal combinations will occur only occasionally even

*Report of Subcommittee V, on Basic Sciences and Their Relation to Maternal and Fetal Problems.

in a stock carrying lethal genes. In this connection irradiation of pregnant women is commonly held to be productive of defective children, while animal experimentation suggests the possibility that women not pregnant may, nevertheless, incur changes in the germ plasm that appear later as harmful, probably recessive, mutations. So-called racial poisons, however, damage by direct action, not by genetic changes.

The genetic factors governing the pregnant mother and her placentation are virtually unknown. Placenta previa, ectopic pregnancy, position of the fetus in utero, prematurity, ease of delivery, lactational capacity, the effect of the mother's age on the character of the offspring, contracted pelves, all these present opportunities for investigation on which obstetric records could throw light.

Questions pertaining to the sex determining mechanism, the level of metabolism in the two kinds of embryos, the primary sex ratios, the sex ratio in intrauterine mortality, deviations from the normal sex ratios, aberrations in the development of the reproductive system, sex limited and sex linked traits, these, again, are fertile and stimulating lines of inquiry. In addition, a much more extensive and intensive study of the inheritance of special traits and characteristics of all kinds is highly desirable.

Consanguineous marriage, by which recessive traits, when doubled, come to expression, is of practical importance in a eugenic consideration of child welfare. In general, if specific, undesirable traits have not appeared within three generations of a proposed cousin marriage, the danger of such a union is merely that of a random mating. Dominant traits are already apparent in such parents; they become significant only if the mechanism of inheritance is such that a double dosage intensifies a minor anomaly into a defect incompatible with life. Assertion that racial crosses tend to be sterile is without support, as is also, apparently, the claim that they tend to produce disharmonious results by which the offspring is penalized.

Studies of the birth rate and infant mortality rate in various strata of the population and in specific important groups are prerequisite to any intelligent course of eugenic action. One does not know, for example, the birth and infant mortality rates of the feeble-minded as compared with the normal and superior intellect.

Investigations seem to indicate that "saving the babies" in the first year of life tends, beyond a certain point, to increase the mortality in the succeeding years. Even part of the reported decrease in infant mortality in the last century is a bookkeeping gain due to the better registration of infant births, thereby increasing the denominator in the fraction represented by the ratio of deaths over births. Some of this effort to keep alive individuals past the reproductive period is dysgenic because it perpetuates weak strains.

Any long-time program for the reduction of infant mortality must be given a eugenic orientation. This means, besides the attempt to save every possible human life, the adoption of a population policy which will safeguard racial progress. Such comprehensive proposals include: (1) a reorienting of education with more biologic subjects taught; (2) more publicity of superior pedigrees, represented possibly as a "eugenic quotient" compounded from the intelligence quotient, a measurement of general good health and a measurement of sound ancestry; (3) organized provision of a more normal social life for superior young people eligible for marriage; (4) information bureaus on problems of reproduction, heredity and personal adjustment; (5) physical examination before marriage; (6) provision for advance notice of intention to wed, for the discouraging of freak, fraudulent, runaway, drunken and other unwise marriages; (7) discouraging or preventing the reproduction of those whose offspring are pretty certain to be unfit; (8) encouraging the birth rate of the fit; (9) adequate immigration control, not only in numbers but in quality; (10) restriction of war; (11) promotion of continuous research in everything pertaining to the establishment and perpetuation of sound families.

Fundamental to any attack on the manifold problems regarding the nutritional, respiratory, and excretory relations existing between mother and fetus is a clear understanding of the intimate structure of the placenta. Many of the details are well established, but, surprisingly enough, one feature of paramount importance is among the least well understood. The human ovum is one that implants by erosion or burrowing, and it is a commonly accepted belief that both the arteries and veins of the material decidua are thereby tapped, the former pouring blood into placental sinuses into which the chorionic villi dangle. This classic view has the weight of many authoritative names in its support and only spasmodically has its validity been challenged. To be sure, vascular injections, in the hands of various investigators, have seemed to show the truth of this contention, yet there are several factors that, uncontrolled, can easily invalidate such findings. Among the pitfalls may be listed the following: (1) placentas already subjected to injury through labor contractions are not reliable material for study; (2) after death, necrotic changes cause vessels to be injured easily and ruptured during injection; (3) complications in interpretation may be caused by areas of extravasation in placentas sufficiently normal to carry the child to term; (4) breaking of the membranes or opening of the fresh uterus may result in an upset of the normal pressure balance so that maternal vessels of the maternal placenta are ruptured; (5) narrow fiords extend from the intervillous space into the decidua basalis, and some workers have mistaken these for arteries; (6) collapse of the villi may cause nega-

tive pressure in the intervillous space, drawing the injection mass out of the veins which drain it.

Opposed to the popular conception of the placental circulation are numerous facts. No one has ever traced an artery opening into the intervillous space of a young normal ovum. This is in contrast to the open communication of space and vein, and even space and capillaries. Early ova are bathed with a serum containing relatively few red corpuscles. Various investigators have failed to find blood in any amount in the intervillous space of placentas of the later months, provided trauma or other disturbances are absent. In those cases showing the presence of blood it can be best accounted for either by ruptured vessels (either fetal or maternal) or by backflow from the draining veins. Correlated with this is the repeated failure of everyone to demonstrate any significant number of arterial openings; in this connection one must be warned against the rupture of degenerated arteries during the first stage of labor.

An alternative working hypothesis of the vascular relations would emphasize that the openings of capillaries from the uterine arteries are so infrequent that only a trickle of blood comes from them. The intervillous space is a huge tissue space filled mostly by a fluid passing out from the decidua basalis, and in the last half of pregnancy from the myometrium as well. These edematous maternal tissues are traversed by capillary connections which serve as direct communicating channels between arteries and veins. The intervillous fluid is drained away by uterine veins, especially abundant at the placental margin. Such drainage is facilitated by rhythmic uterine contractions, while the fluid is also agitated by volume changes in the chorionic villi reacting to fluctuations in the fetal pulse.

Much remains to be done. The contents of the intervillous space must be studied directly and this can be done upon human material, supplemented by studies upon Old World monkeys and anthropoid apes. Such studies must be pursued by chemical, physiologic and histologic methods. The rhythmicity of uterine contractions should be investigated with respect to its possible rôle in propelling the intervillous fluid. Identification of lymphatics in the endometrium, and especially in the decidua basalis, should be established and their relations to resorption, edema and the spread of malignant growths clarified. The relations of every vessel of the maternal placenta must be known for a series of unaltered placentas of all ages. Such material will also serve for other studies, such as the nature and origin of placental septa and the true volume of the intervillous space during the several stages of pregnancy.

The relation of physiology to fetal and maternal problems can best be indicated by noting some of the striking gaps in our present infor-

mation. For example, the sterility problem is more important than that of contraception, and a large proportion of cases will yield when once the physiology of human reproduction is better understood. Knowledge of the physiology of menstruation is notably deficient in spite of the attention given the subject and its importance both in the care of sterility and in the alleviation of the complications of menstruation.

Many features in the biology of egg and sperm await elucidation. Included among these are the forces operating to cause the discharge of the follicle at the right time, the picking up of the ovum, its propulsion down the uterine tube, as well as the transport of the sperm upward.

Pregnancy changes in the genital tract are but partially understood. Major problems include the growth and multiplication of muscle cells and connective tissue, the rôle of the several parts of the tract in parturition, and the physiology and pharmacology of the smooth musculature. More specifically, the exact arrangement of muscle bundles, the possible presence of conducting bundles (like the atrioventricular bundle of the heart), the analysis of the various parts of the uterus, the innervation of the uterus, its behavior during pregnancy, with special reference to version of the fetus, and, finally, the action of the parturient uterus, which no one has yet fully observed in the human, all these are fertile fields for investigation.

The hormonal control of pregnancy changes in the uterus and mammary glands is a topic already actively pursued and in which startling new relations are rapidly coming to light, yet there is much still to be done, especially as regards the interrelationships.

Pregnancy alterations in the pelvic ligaments seem probable in the light of recent work. Although changes in the vagina and cervix in preparation for birth are fairly well elucidated histologically, the hormonal causes back of them are little known. Other hormonal problems deal with the relations of the organs of internal secretion to metabolism. The details of the Zondek-Aschheim and Friedman tests need working out.

The question of the permeability of the placenta should be pushed further to discover to what extent its activities are controlled by physical and to what degree by "vital" forces. The passage of hormones, including the possibility of an embryo hormone, and the passage of toxins and antitoxins enter into consideration here. The determination of the span of pregnancy and the cause of birth are practically unknown from the physiologic side.

The relation of the endocrines to maternal and fetal problems centers largely around the female sex hormones, and it is in this field that the greatest investigative activity is occurring. However, evi-

dence has accumulated so rapidly that much conflicting opinion as to interpretation exists. Additional experimentation and critical analyses of work already completed are urgently needed to clarify the general situation.

The influence of the follicular hormone in causing a periodic development of the uterus and vagina of mammals has been extended both chemically and physiologically. Important is the finding of enormous quantities of this hormone in the urine of pregnant women. The evidence that the active substance of urine is identical with that in the follicular fluid is mainly physiologic. Two pure crystalline compounds possessing estrogenic properties have been isolated from urine, and it is important next to isolate the active principle from the liquor folliculi to determine which of the two it may be. For what purpose large amounts of the follicular hormone are produced to appear in the blood and urine during pregnancy, is a pertinent subject of inquiry. At present only shrewd guesses can be hazarded.

Other questions to be asked are the following: What are the functions of theelin and triol in pregnancy? Do appreciable variations in the quantities of these substances excreted by different patients occur? Can such variations be correlated with the clinical condition of the patient? Can the hormone excretion be correlated with mammary gland development and subsequent milk production? Does administration of these hormones produce changes in the other glands of internal secretion, such as the hypophysis or thyroid?

The corpus luteum is known to elaborate an internal secretion which produces a progestational development of the uterus after the follicular hormone has played its part. It also is necessary to nidation and early development. In the guinea pig it assists the birth processes by relaxing the pubic ligaments. Questions to be answered arise: Is the tendency to premature births due to an improper functioning of the corpus luteum? How long must the internal secretion be supplied for a normal period of gestation? Does the supposed antagonism between the internal secretion of the follicle and corpus luteum actually exist? Chemically, what is the nature of the internal secretion of the corpus luteum? Is the corpus luteum concerned with milk production? Is there an interrelationship between the corpus luteum and the hypophysis?

Placental extracts of three types and with distinct properties have been recognized. They are: (1) the follicular hormone; (2) a fraction named emmenin; (3) a fraction possessing many of the properties of the so-called luteinizing factor of the anterior hypophyseal lobe. Some of the problems arising around these hormones are similar to those of the ovarian hormones. In addition, there are others: Are they formed by the placenta or merely stored there? In the latter instance are they withdrawn from the blood for protective reasons or for positive

action? Does the placenta produce substances concerned either with mammary development and lactation or with the suppression of ovulation? Are the follicular hormones obtainable from both ovary and placenta identical?

The anterior lobe of the hypophysis has been connected with a variety of functions. There is the relation to the attainment of maturity, both in body and sex glands. The luteinization of the ovarian follicles, the induction of premature ovulation are other features, both of which may also be produced through the urine of pregnant women. It also is assigned a rôle in the systems producing uterine bleeding and mammary secretion. Perhaps too many functions have been ascribed to the hypophysis; at least, all the alleged activities should be examined more critically.

Due to Zondek and Aschheim, the urine of pregnant women has been proved to contain three substances: the follicular hormone, the ovulation factor and the luteinizing factor. The test for pregnancy devised by these workers on mice has been shortened by Friedman with rabbits to twenty-four hours. The establishment of laboratories where such tests could be made would be desirable, and the education of physicians to the value of such tests should be undertaken.

It is unfortunate that the relations between man and microbes must place accent on the activities of malignant forms to the exclusion of much that is interesting and important concerning the excellent qualities of the good germs. Microbic disease may be transmitted to the offspring by implantation from either parent. Of parental implantations, both syphilis and tuberculosis must be recognized. Parenthetically it might be well to emphasize that Colle's law (that a woman may bear a syphilitic child and become immune to the disease herself), and Profeta's law (that an apparently nonsyphilitic child may be born of a syphilitic mother), are now known to be incorrect, since practically all children born of syphilitic parents and parents of syphilitic children are syphilitic, and the disease will become manifest sooner or later.

The three principal paths through which contagious disease may be acquired are: the respiratory tract (including the eyes and the lacrimal ducts), the gastrointestinal tract and the urogenital tract. The latter does not concern a discussion limited to infancy and early childhood. It is important to realize that, in general, the breeding place of bacteria that cause contagion is actually within the tissues of the sick person and the attack should be directed toward the destruction of bacteria within the host.

The principal microbic diseases of young children acquired through the respiratory tract are the exanthemas and the acute lung infections, including various types of sore throat. It should be emphasized that

less success has attended the struggle against respiratory diseases than against those that affect the intestinal tract. Antiserums, antitoxins and vaccines have not been very effective, except in some instances. Nevertheless, the shock of scarlet fever and epidemic meningitis has been materially lessened through their use, and smallpox and diphtheria might virtually be eliminated if mankind were sufficiently disposed to bring this to pass. One can predict that within a reasonable time the respiratory infections will be reduced strikingly. The urgent need for study of microbic respiratory infections should be re-emphasized. More loss of working time, more impaired efficiency, more suffering and more deaths are caused by infections of the respiratory tract than the totality of ill effects from all other sources combined. This conquest is the great problem confronting medical science today.

Unlike the respiratory tract, which is normally a germ-free system, the gastrointestinal tract is from the first hours of life a bacterial breeding ground. Half the weight of the feces consists of bacteria, and that this mass of thirty trillions represents the normal daily growth within the intestinal tract is evidenced by the fact that they are not of the same kind as those eaten with food. To multiply in this environment, a bacterium must meet three requirements: (1) it must thrive at body temperature, (2) it must withstand many antagonistic forces in the intestinal environment (e.g., enzymes, competition with resident bacteria, and reaction changes of intestinal contents), (3) it must not produce products sufficiently inimical to arouse latent defensive and offensive powers to the host's tissues.

Shortly after birth three principal varieties of intestinal bacteria establish themselves. They are: Bacillus bifidus, Bacillus acidophilous, and Micrococcus ovalis. They agree in not producing putrefactive products; all three ferment sugars, including lactose from which lactic acid is derived. Lactic acid is Nature's preservative, and in the alimentary tract of the nursling it restrains the growth of putrefactive, or of disease-producing bacteria, and adds much to the defense of the immature and vulnerable alimentary canal. Also, most pathogenic bacteria, in the presence of sugar which they can utilize, produce, not poisons, but lactic acid. Breast milk is admirably adapted for maintaining this supply of lactose. This protective action of the nursling's bacteria is evidenced in the better protection against intestinal infection by normal nurslings in contrast to the susceptibility of artificially fed babies.

Strangely enough, along with this goes a concomitant resistance to respiratory infections, although the reasons for this phenomenon are not fully understood. In a correlative fashion, a change to artificial feeding produces changes in the character of the intestinal flora both

as regards varieties and their chemistry, and such babies are more liable to suffer from microbic intestinal infections.

The nearer the milk administered to the artificially fed infant approaches human breast milk in composition and sterility, the nearer the artificially fed infant approaches in its general resistance and condition that of normal nurslings. Unmodified cow's milk increases the proteolytic and putrefactive bacteria and decreases the lactocidogenic ones. If implantation in the intestinal tract is desirable, B. acidophilous is the one to use and not B. coli (as advocated by Herter) or B. bulgaricus (as advocated by Metchnikoff). However, this procedure is not ordinarily necessary since the same end may be achieved by suitable dietary modifications. The method is to reduce protein, increase carbohydrate and provide for feedings frequent enough to insure a continual supply of lactose.

Science has already achieved a remarkable conquest through a sig nificant reduction in the incidence of acute infections. This is manifest in the lessening of both infantile and maternal illness and deaths. It has been most conspicuously successful in intestinal infections, which are transmissible by food, fingers, flies, and water. Infections of the respiratory tract have been more elusive. They are still captains in the army of death. They affect parents and child alike; their conquest is one of the great problems of the future. Venereal infection, too, has been reduced, but by no means overcome. Here education must play an important part.

For the future, much remains: the missing links in the biology of infection—the totality of events which transpire between the time the microbes leave their ailing host and reappear to infect new victims—must be sought for to make prevention perfect. New methods and procedures in the specific therapy of bacterial infections, especially in the group of the respiratory and meningeal infections, are urgently needed. Finally, the dissemination of reliable information and practice for the care of the mother, prospective and actual, and for the preservation of the offspring, is a national challenge.

An investigation has been made on the postmortem findings in 337 stillborn infants, 179 of which were males and 158 females. Fetal death due to maternal disease accounted for 10.97 per cent of the total; of these, 5.35 per cent were attributable to syphilis, while 4.45 per cent resulted from toxemia of pregnancy. Deaths of placental or funicular origin totaled 9.49 per cent, about equally divided between placenta previa, premature separation of the placenta, and prolapse and compression of the cord. Had placentas been studied, excessive infarction would probably have been found as a cause in some instances. Malformations incompatible with independent life totaled 10.98 per cent, of which anencephaly accounted for most of the cases. This percentage was probably unnaturally swollen by specimens of

anencephaly sent in from outlying towns. Birth trauma was the most frequent cause of death in this series (29.97 per cent), while the commonest injury was to the falx cerebri and the tentorium cerebelli, or both. It is probable that mortality from this cause could be reduced with better obstetric care, since 61 of the 101 cases were regarded as normal spontaneous deliveries.

In 15.43 per cent of all cases prematurity was considered the cause of death in the absence of any other explanation, but this is not satisfactory, except for those specimens born before the eighth month. The cause of prematurity itself is the greatest gap in our knowledge of stillbirth. The prevention of premature labor would reduce the number of stillbirths by at least 20 per cent. Postmaturity was designated as the cause in 1.18 per cent but this explanation is not satisfactory and hides our ignorance of the real cause. Specimens that were retained and became macerated total 16.02 per cent. the cause of death in these instances is unknown and none showed any evidence of syphilis. In approximately 40 per cent of all the stillbirths examined the cause of death was undetermined.

A similar postmortem study of 500 infants and children under eleven years of age affords some basis for determining the more important factors concerned in the death of young children. This is important because before preventive measures are instituted we should know what our most important problems are. It can be shown that the mortality is highest during the first day of life and that it decreases steadily thereafter. During the first week nearly all the deaths are due to prematurity, birth trauma and congenital malformations. After the first month, infectious diseases and infections are chiefly responsible.

The mortality from congenital malformations cannot be reduced appreciably. We have no knowledge of their etiology and the great majority are inconsistent with prolonged life. However, a few lives in this group may be saved by appropriate operations.

Premature birth is a problem of great importance. Many premature infants may be saved if great care and skill are exercised. Education of physicians and nurses in the care of the premature infant should be undertaken. However, the fundamental problem is the cause of premature labor. One knows that in a few instances labor is brought on prematurely by disease of the mother, by injuries and by physical overexertion; but, as a rule, no satisfactory cause can at present be established.

The deaths from birth trauma occur chiefly during the first week. The premature infant is more liable to sustain trauma than the full-term offspring, and the problem is, therefore, partly that of prematurity. It is known that violent uterine contractions, disproportion

between the size of the head and the birth canal, and instrumentation all tend to cause injury of the brain. No doubt there are other factors also. Possibly some lives in this group could be saved by closer study of the problem.

Malnutrition is no longer a factor of great importance. The modern science of infant feeding has had remarkable success in this field.

Accidental deaths occur largely in the older children of the group and are mainly due to automobiles. This is a problem for the community rather than for the medical scientist.

The acute infectious diseases take their toll chiefly after the age of six months. Very young infants apparently have some passive immunity from the mother, and are usually less exposed to contact infection. Diphtheria may be prevented by previous immunization. Quarantine against measles, pertussis and scarlet fever is not very effective because of the difficulty of distinguishing these infections from common colds in their early, most infectious stages.

A very high mortality results from nonspecific infections of the upper respiratory tract, such as common colds, pharyngitis (including tonsillitis), bronchitis, and bronchopneumonia. One of the common complications of colds and sore throat is otitis media, which often results in suppurative mastoiditis. This is one of the most dangerous infections of childhood. Another frequent complication of colds and sore throat, one which often results fatally, is bronchopneumonia. Research in the prevention and better management of this group of infections is greatly needed and should be encouraged in every possible way.

Cases of tuberculosis are all instances of contact infection in the home. The crusade against tuberculosis is gradually reducing the death rate from this disease.

In the community forming the basis for this study (Minneapolis) syphilis is infrequent in children but is somewhat more frequent in the stillborn.

The renal condition connected with toxemia of pregnancy and eclampsia leads to the recognition of four clinical types:

1. Patients with chronic nephritis preceding the pregnancy. These patients continue with signs of renal deficiency after pregnancy. They form the "nephritic" group.

2. Patients presumably healthy before pregnancy who develop albuminuria during pregnancy, in whom all signs and symptoms of renal disease disappear after delivery but do not recur with a subsequent pregnancy.

3. Patients presumably healthy before pregnancy who develop albuminuria during pregnancy, and in whom all signs and symptoms

of renal disease disappear after delivery but do not recur with a subsequent pregnancy.

4. Patients presumably healthy before pregnancy who develop albuminuria during pregnancy, but in whom all the signs and symptoms of renal disease persist permanently after delivery.

This grouping has proved useful; it is clinical in character and avoids the pathologic issue as to the histologic and pathogenetic characteristics of the glomerular lesions found in the patients of the fourth group. (It is assumed as a demonstrated fact that a chronic kidney lesion much resembling a chronic nephritis sometimes develops from the ordinary acute toxemia kidney.)

The first group of true nephritis, already established before pregnancy, imposes on us a relatively simple responsibility. At least, the question can be stated clearly: given an already incurable kidney disease, perhaps with well-preserved kidney function and fair life expectancy, does a superimposed pregnancy impose a too heavy burden upon the diseased kidney and hasten the downward course of the condition? For the most part this question might be answered in the affirmative, but the situation seldom presents itself in such a simple form.

In regard to the second group two questions arise: First, how many cases actually fall into this fortunate group? Second, how long does it take to recover quickly, and if not, can anything be done to secure a quick recovery? To the last part of the second question an indirect approach will be indicated presently. The first question as to the relative size of this most favorable group is answered very differently by different observers. The older teaching, which formerly was believed to be based on facts, was that toxemia with the first pregnancy produced a sort of immunity for subsequent pregnancies. Nevertheless, the justification of such an optimistic teaching seems considerably shaken by recent results, and Gibberd, for instance, is willing to place only about 50 per cent of all cases of albuminuria of pregnancy in this group. A renewed statistical inquiry in this country seems worth while.

As to the third clinical group two remarks can be made: First, this is indeed a very peculiar hypersensitiveness, the cause of which is obscure and will probably be found largely through chance. Second, some women belonging to this group remain in it for two or three pregnancies only, after which the condition fails fully to clear up and the patient passes into the fourth and least favorable group.

The fourth group, as defined, contains the word "presumably," which is included for two reasons: first, to emphasize the care needed in deciding between groups 1 and 4, and second, as a concession to pathologists, and clinicians as well, who were fond of arguing that a noninflammatory toxemia of pregnancy should not or could not de-

velop into a chronic glomerulonephritis. However, for all practical purposes, experience has shown that toxemia of pregnancy develops into a chronic type of kidney lesion, the clinical course of which may vary considerably. The limits lie between a heavy albuminuria without any other important symptoms, persisting for as long as twenty-eight years without leading to renal insufficiency, and a rapidly progressing, one might well say fulminating nephritis with extremely high blood pressure, severe retinal changes and rapidly failing kidney function, ending in uremic coma eight to twelve months after delivery. The fourth group is estimated by Gibberd to include as many as 10 per cent of all cases of toxemia of pregnancy; others offer figures somewhat lower.

These groups have to be considered from the point of view of the responsibility the physician and obstetrician must assume and *particularly from the viewpoint of preventing cases from entering group 4.* It is a commonplace that both in the second and third group there are considerable variations in the time required for the complete disappearance of all renal symptoms and the regaining of full health. There is nothing original in the statement that recovery from the renal damage of toxemia of pregnancy depends very little on the sparing and protecting treatment following the delivery, compared with what happened before labor. Also there is a rather general clinical impression to the effect that the duration rather than the severity of the symptoms of toxemia before the spontaneous or induced termination of the pregnancy is the single factor of greatest importance for a rapid or protracted recovery.

Banister recently stressed the importance of early recognition of the beginning toxemia, emphasized the importance of immediate and energetic treatment, and then stated: "I have an idea that prolonged treatment defeats its object." He sets a time limit of some seven days for energetic treatment. Should recovery or definite improvement after this period not be noted, radical treatment should be chosen. At this point the following statement of Gibberd is important: "In allowing pregnancy to continue, we are exposing the mother to a very real risk of permanent renal damage for the sake of what may be a macerated fetus." The number of obstetricians and consulted internists sharing similar views is probably fairly large. Yet, the therapeutic view here presented is based both on that indefinite something cherished as clinical impression and on careful study of a large amount of material, handled to a considerable extent in a way contrary to what is now proposed. It is only actual results obtained in large series of cases treated according to this principle, that will prove the value of the procedure.

Further, the fact that in carrying out this principle a time limit of observation is made use of as the decisive factor, rather than specific

symptoms observed and evaluated during the observation period, serves to bring out the point that a field is here waiting for well-planned and correlated researches in clinics rich in material. By accurate and systematic recording of different symptoms biologic indications should be found for therapeutic procedures capable of preventing or reducing permanent damage. In toxemia of pregnancy as in few other diseases a multitude of valuable signs can be studied already, and with an intensified attack new ones are likely to be brought to light.

The practice of modern obstetrics would be utterly impossible without the use of certain drugs, such as anesthetics, analgesics, oxytocics, antisyphilitics and antiseptics. The proper use of these drugs must rest on a thorough investigation of their pharmocologic action. The results obtained by experiments on animals must be confirmed by accurately controlled research in the clinic. There are still great gaps in the fundamental pharmacologic knowledge, and particularly in the action of drugs with respect to their action in obstetric cases.

The requirements for ideal anesthesia and analgesia in obstetrics are exacting. Pain should be relieved, without at the same time causing asphyxia and undue depression of uterine contraction. Further research is needed in this field with respect to the selection of the most suitable drugs, proper dosage and administration.

Accurate information is available on the oxytocic action of pituitary extract and ergot. Recent work has furnished satisfactory methods for the bio-assay of these drugs, and it is now urgently needed to determine clinical dosage, so as to secure the desired therapeutic effect without the production of untoward reactions.

With regard to the care of the use of organic arsenicals, bismuth and mercury preparations for the treatment of syphilitic mothers, the available chemotherapeutic knowledge is adequate for practical purposes. Further work dealing with the penetration of those remedies into the tissues of the fetus in effective parasiticidal concentration is called for.

The usefulness of silver nitrate in the prevention of ophthalmia neonatorum is well established. Efforts to replace less irritating preparations for silver nitrate may be worth while. The indiscriminate use of antiseptic douches is dangerous. Serious systemic poisoning may follow as a result of absorption of the antiseptic by the genitourinary tract. Further attempt should be made at the discovery of chemotherapeutic agents for gonococcus infections. Work of this nature is exceedingly difficult and requires good laboratory facilities, and well-trained specialists.

The present methods of resuscitation of the newborn infant are crude. The use of carbon dioxide-oxygen mixtures should be given a thorough trial.

Radiation therapy should rest on recognized principles of the basic sciences. A consideration of the nature of photochemical change leads to the view that the effective radiant energy is absorbed into the atoms of which the tissue is composed—a superassimilation. The initial effect is chemical activation. The resulting chemical change is the beginning of an ever-expanding stream of chemical and physiologic events. We do not observe the initial change; we observe only some more or less conspicuous physiologic or morphologic change which follows the exposure through amplification after a latent period. This obscures quantitative relations between exposure and effect. Nevertheless, it is possible and necessary to formulate basic principles of dosage, if for no other reason than to discover how empiric procedure differs from the theoretical. Such dosage determination depends on the area and volume of the tissues irradiated, the intensity and wave-length of the radiation used, and the duration of the exposure.

Since reproduction and lactation demand from the mother considerable sacrifice not only of activity but also of body substance it is essential to know what are the necessary nutritive requirements both for ordinary maintenance and for the increased demand during pregnancy and lactation.

From the standpoint of energy requirements of the adult woman there are required between 1,500 and 3,000 calories daily, depending on the basal requirements of the individual and the amount and intensity of muscular activity in which she indulges. In pregnancy the total energy production increases slightly, beginning at the middle of gestation and finally reaching the maximum of approximately 20 per cent above her basal value before pregnancy; such increases apparently represent the heat production of the newly formed tissue both of the fetus and the mother, the rate per unit mass of tissue not being materially changed. During lactation the caloric intake should be adequate for the ordinary maintenance requirements of the woman plus the energy loss in breast milk; the average mother will require from one-fifth to one-third more calories than for maintenance alone.

The protein requirement of woman is known to be greater during the period of pregnancy than during her usual active adult life, but it is difficult to make a precise determination of the protein requirements for any stage in the life cycle. Protein requirement under a specific set of conditions depends on the biologic value or amino-acid make-up of the protein, the number of nonprotein calories, and the

degree of tissue activity, the accustomed amount of protein taken, the physiologic and nutritive state of the woman. The requirements for human reproduction can only be stated tentatively and within wide limits: for pregnancy from 25 to 50 gm. in addition to the maintenance allowance of from 40 to 60 gm., and for lactation an additional 50 to 100 gm., depending on the quantity of milk produced.

Growth, pregnancy and lactation intensify the physiologic demands for minerals. From the practical dietary standpoint the problem is a most important one, especially in the United States, since it has been demonstrated that the American dietaries are inadequate in calcium, and in certain localities iodine deficiencies are very common. If a deficiency in minerals, namely, calcium, phosphorus, iron and iodine, occurs during the reproductive cycle, untoward effects may manifest themselves in the occurrence of relative infertility and abortion in the mother, and anemia, nutritional instability, tooth and skeletal disturbances appear in both mother and offspring. Although no exact determination of the mineral requirement throughout all stages of the human reproductive cycle has been made, it is estimated that from 1 to 1.5 gm. of calcium, 1.5 gm. or more of phosphorus, 18 mg. of iron, 0.014 mg. or more of iodine daily are required for the average woman during the pregnant period.

Animal experimentation has demonstrated that diets adequate in vitamin content for maintenance and growth fail to support normal reproduction and lactation. A quantitative statement of the vitamin requirements of man or his ability to store these factors in his tissues are not known with any degree of accuracy. It is apparent that if there is a deficiency in the food supply of the mother, either the maternal or the fetal tissue (or, perhaps, both) suffer. The efficiency of the transfer of vitamins from the maternal dietary to food for the fetus during prenatal life and to breast milk during postnatal life is not known for the human mother.

More problems present themselves with regard to nutrition than can possibly be enumerated here. One can merely point out that an earnest desire has been created in modern parents for sound information and advice on all problems of parenthood. Although it is generally recognized that an adequate nutritional program is of utmost importance during preparation for motherhood, pregnancy and lactation, for the good of both mother and child, only a fair start has yet been made toward supplying the kind of detailed information that would be of greatest use.

Little specific investigation has been carried out regarding the effect of maternal diet on pregnancy and the fetus. Statistical and experimental studies upon maternal diet and its effect upon the size and weight of the newborn indicate that actual starvation and se-

vere inanition do play a rôle in reducing the size and weight of the offspring, the production of fetal death and the premature termination of pregnancy. In moderate degrees of inanition and in simple control of maternal diet the fetus suffers no harm and is not limited as to size, weight or maturity.

Investigations on calcium deficiency show that this mineral is necessary for the proper development of the fetus and the maintenance of maternal weight during the pregnant state.

Vitamin A deficiency affects the fertility of the animal and is of great importance in maintaining resistance to infection. It may be of value as a prophylactic agent during pregnancy and the puerperium. Vitamin C is necessary for the successful termination of pregnancy and the health of both mother and fetus. It affects both in proportion to the severity of its deprivation, though the fetus and the newborn show less effects of the deficiency than does the mother. Vitamin D has been shown to be essential for the embryonic development of the chick and the fish. It is very probable that the susceptibility of the newborn to rickets can be lessened by adequate amounts of antirachitic substance in the maternal diet. Vitamin E is essential for the successful termination of pregnancy. Its absence produces degeneration of the fetal mesodermal structures, especially the blood-forming tissues, which ultimately results in fetal death and absorption of the embryo, membranes and placenta. The characteristic manifestations of vitamin E deficiency are difficult to obtain even in well-controlled experimental animals, unless the vitamin is practically eliminated from the diet. It is doubtful whether it plays an important rôle in fetal death and abortion in the human because of its widespread distribution unless there are unknown conditions in bodily metabolism which in some way interfere with its proper utilization. There is a suggestion, however, that the use of vitamin E as a therapeutic agent in primary sterility of unknown etiology may be of value. Experimental evidence indicates that the severity and rate of destruction of the embryo and membranes is dependent on the quantity of vitamin E in the diet.

Diet can be shown to bear a direct relation to the development of the bony pelvis of the adult woman. From maternity hospital records it appears that the incidence of deformed or contracted pelvis, although varying greatly with geographic location, climate, race, etc., shows a mean of about 15 per cent with about one-fourth of these resulting in difficult labor. Racially, negro women have an incidence about four times as high as white mothers. An etiologic classification of pelvic deformities is desirable from the standpoint of prevention but this is difficult because of lack of knowledge as to the exact

causes. Hereditary and germinal defects account for some. Adjacent developmental disturbances and overburdening the normal pelvis during childhood can probably account for others. It is agreed that rickets is a most important factor. Among the direct causes of rachitic deformities of the pelvis are body weight, muscular tension and retardation of bony growth in infants before sitting or walking. In older children the mechanical effects of the body weight with counterpressure become of major importance.

As in skeletal deformities of early rickets in general, there appears to be some correction in the pelvic deformities of early rickets, but these deformities doubtless largely persist into adult life. From several lines of evidence one may conclude that the probability is high that a large proportion of the adult female pelvic skeletal deformities may safely be ascribed to the persistent effect of earlier rickets.

Etiologically, rickets seems clearly to be a metabolic disturbance of complex nature, involving the process of calcification in general and of ossification in particular. This process requires several factors of which the most important are: (1) sunshine; (2) an internal secretion of the parathyroid glands that regulates the process in some unknown way; (3) the presence of calcium and phosphorus in proper form, amount and proportions; and (4) an antirachitic factor (vitamin D). Since the production of the latter is stimulated by the irradiation of a "provitamin" substance (ergosterol) both in the skin of the living body and in foods outside the body, the primary importance of sunshine becomes evident. This explains the prevalence of rickets in dark dwellings and cloudy climates, as well as the marked predisposition of the dark-skinned races.

Osteomalacia, which most recent investigators regard as adult rickets, osteoporosis in chronic starvation (as well as in dietary deficiencies), scurvy, osteitis fibrosa, etc., are other bone softening disorders of relatively slight importance, in comparison with rickets, in the production of skeletal deformities.

The desirability of eliminating human rickets is apparent. It would greatly reduce the number of cripples and, incidentally, the pelvic deformities constituting the hazards of childbirth. It would also avoid much ill health and many deaths due to the infections to which rachitic patients are markedly predisposed. Rickets appears to be a disorder readily preventable through hygienic measures. The apparent danger of dietary shortage of vitamin D in natural foods is obviated by exposure of the skin to sunlight and by the artificial irradiation of many foods. These measures have been shown to be practicable and efficient for the prevention and cure of rickets. Of course, proper dietary provision must also supply the necessary salts and other nutritional factors. Fortunately, the same factors for the prevention

and cure of rickets appear to be likewise effective in osteomalacia and allied disorders. The future outlook is, therefore, hopeful for the marked reduction of pelvic skeletal deformities, and for the elimination of the associated dangers of childbirth, through preventive hygienic measures during infancy and childhood.

Although human milk can fall short of being an adequate food to meet all needs of the baby, yet, in general, it may be said that the poorest quality of breast milk is superior to the less desirable types of artificial feeding. This conclusion is based on studies in which the nutritive state, rate of growth and development, and relative infant morbidity and mortality have served as indices.

If one inquires as to what the qualities are that make human milk superior, various facts come to light. With regard to protein, it is easily digested and occurs in the proper proportion and in a suitable medium for efficient utilization. The fat not only furnishes material for proper formation of tissues but also seems to function in the digestive processes of protein when it is present in proper amounts (from 3 to 5 per cent). Normal human milk carries a high percentage of lactose and is remarkably constant in amount but probably seldom causes digestive disorders. The amount of lactose seems sufficient for the production of heat needed by the child.

With regard to certain minerals (calcium, phosphorus, chlorine, sodium, potassium and magnesium) it appears that for optimum utilization for the nutrition of the child it is paramount that they be presented in proper combinations. Although it is impossible to say just what the combinations, relative proportions, and absolute amounts of these salts should be, it seems that normal human milk does provide them in a manner which is best adapted for the infant. The dietary rôle of other minerals, such as iron, copper and iodine, present in minute amounts, is little understood.

With regard to vitamins, it may be said that although there are many ways in which the young infant may fail to receive or utilize its daily quota of vitamins, many grow and develop without experiencing nutritive disaster when fed either breast milk or cow's milk. There is apparently a great factor of safety in vitamins A and B, even of human milk, but human milk may fail as a protective agent against rickets even when the maternal diet is notably sufficient and well balanced. The adherence of women throughout pregnancy and lactation to dietaries rich in fruit, vegetables, dairy products, glandular tissues and the like, together with an early presentation of vitamin-carrying foods to the infant, serve as the most potent factors in the production of a nutritionally stable child.

The influence of diet on the quality and quantity of secretion of human milk is another factor to be considered. The food of the mother, whether insufficient or excessive in caloric value, seems to alter the quality of the milk.

Differences of opinion exist as to whether the quality and quantity of fat in the dietary is a determining factor in the composition of milk and further studies are needed before definite conclusions can be drawn. It is agreed that dietary carbohydrate does not influence appreciably the lactose content of breast milk, but that it may affect the fat content. Dietary protein does seem to influence the nature and concentration of the nitrogenous substances and perhaps the fat of breast milk to some extent, but the data are too limited to permit of clear-cut conclusions. A liberal, varied diet, containing protein of good quality, enables the average mother to produce milk of satisfactory composition and is in accord with the dietary recommendations in the literature on human lactation. The mineral content of diet in its relation to that of the milk is a subject in which conflicting results appear in many cases. Information is now being collected on the influence of the liquid intake in variations in the composition of the secreted milk.

The mother does not constitute a potent factor of safety in supplying the vitamin requirements of the infant. Consequently there is a rather direct relation between specific vitamin deficiency diseases in nurslings and the same deficiency in the mother's diet. There are findings of an increase in vitamin C and D content of human milk after irradiation.

Specific foods do not seem to affect the quality of milk nor cause disturbances in the infant. Drugs appear not to be transferred to the milk in sufficient quantity to affect the infant adversely.

With regard to psychic influences on the secretion of milk it is apparent that the psychic state of the lactating woman (including her innate disposition, intense emotions, mode of living, environment and extent of physical activity) do apparently play an important rôle on the quantity and quality of milk secreted. However, it is obvious that little is known regarding the extent or manner in which these factors act, or the relationship of mental phenomena and corresponding physiologic changes in the nervous system and mammary function. This paucity of present knowledge on the phases of this question of the psychic influence on milk secretion emphatically solicits coordinated investigation of all of these psychologic, sociologic, physiologic, and biochemical phases.

RECOMMENDATIONS

The entire fund of present information concerning what is desirable in safeguarding the health of mother and child rests, with a few exceptions, upon definite underlying principles rather than upon empiric procedure. These principles, in turn, are directly or indirectly traceable to discoveries furnished through the fundamental medical sciences. Although the frontiers of scientific knowledge are being pushed steadily backward by vigorous research in all these basic branches, there is, unfortunately, no concerted and primary effort toward attacking the peculiar problems of child health and protection. Instead, most of the useful discoveries of this nature have been made either quite without applied intent or else as the result of isolated and sporadic directed research.

The great need is for an organized, simultaneous attack through workers representing all the basic sciences. This might be effected by isolated groups, but obviously there would be distinct advantages in centralization. The program would be less spectacular immediately, but with more promise in the end, if attention were first directed toward filling in the existing gaps in the fundamental stock of information. What some of these important gaps are in each basic science has been indicated in the preceding pages. It should be noted that these several contributions, valuable as they are, can only be considered as representative summaries reflecting the opinion and interests of a particular individual. No attempt toward exhaustiveness was undertaken since placing the responsibility for a whole field of science on one person was obviously an impossible assignment. This lack of inclusive survey is, however, not important at the present time. Selective analyses, reflecting the personal background and interests of the contributors, have indicated many lacunae.

The general recommendation is plain. A representative commission, chosen from the best creative workers in the several basic medical sciences, should undertake a complete survey of the existing situation as regards fetal-maternal problems and then outline a comprehensive program of research. No great constructive advance can be made until it is clear where the problems lie and what their relation to the whole may be. This can then serve as a guide for those laboratories or individuals who may wish to undertake larger or smaller fragments of the plan. Ideally, there should be found financial support for a more organized attack, either parcelling out the work to isolated groups, or, better still, concentrating it in a central research institute.

THE WHITE HOUSE CONFERENCE

Program of the Sessions, February 18, 19, 20, 1931, Washington, D. C., of the Committee on Prenatal and Maternal Care

Dr. F. L. Adair, Chicago, Ill., Chairman*

Subcommittee I. Obstetric Teaching and Education of Physicians, Nurses, Midwives, Social Workers, and Laity

Section a. Palmer Findley, M.D., Rudolph W. Holmes, M.D.

b. George W. Kosmak, M.D.

c. James Robert McCord, M.D.

d. Robert L. DeNormandie, M.D.

Subcommittee II. Prenatal, Maternal, and Early Infant Care. By John Osborn Polak, M.D., Chairman.

Subcommittee III. Interested Organizations. By Robert D. Mussey, M.D.

Subcommittee IV. Factors and Causes of Fetal, Early Infant, and Maternal Morbidity and Mortality. By Hugo Ehrenfest, M.D.

Subcommittee V. Basic Sciences and Their Relation to Maternal and Fetal Problems. By Leslie B. Arey, Ph.D.

PRESENTATION OF REPORTS OF CHAIRMEN

1. Prenatal, Maternal, and Early Infant Care. By John Osborn Polak, M.D., Professor of Obstetrics and Gynecology, Long Island College Hospital School of Medicine.

Consideration of methods for consecutive prenatal, intranatal, and postnatal care for institutional and home cases of different racial groups in urban and rural communities.

DISCUSSION

Statewide Maternal Care and Racial Problems. By Adelaide Brown, M. D.

Methods of Providing Maternal and Infant Care in a Large Civic Community, The Medical Center. By Edward C. Lyon, Jr., M.D.

Conditions in Rural Districts Presenting Special Geographic Features. By Mrs. Mary Breckenridge, R.N.

Problems of Maternal and Early Infant Care in an Agricultural and Industrial State. By Arthur M. Mendenhall, M.D.

Prenatal and Maternal Care in a Large Urban Community. The Large Municipal Hospital. By Minnie E. Bea, R.N.

*For lack of space it is not feasible to print the names of all committee members. These may be found in the Directory of Personnel, published by the Conference.

Prenatal and Maternal Care in a Moderate-Sized Community. By Helen Chesley Peck, R.N.

Rural Hospital of the South. By Alice N. Pickett, M.D.

Maternal and Infant Care as Part of State Health Activities. By Elizabeth M. Gardiner, M.D.

Problems of Providing Dental Care to Maternity Cases. By George H. Wandel, D.D.S.

Social Service Aspects of Maternal and Infant Care. By Ruth Emerson, M.S.

Problem of the Unmarried Mother and the Infant. By Jessie F. Christie, R.N.

2. Interested Organizations. By Robert D. Mussey, M.D., Professor of Obstetrics, University of Minnesota (Mayo Foundation).

Presentation of accomplishments and programs of various organizations of national scope having activities related to prenatal and maternal care.

DISCUSSION

Activities of the United States Bureau of the Census. By T. F. Murphy, M.D.

Activities of the American Red Cross and the Visiting Nurse Association. By Emilie G. Sargent, R.N.

Activities of the Children's Bureau. By Blanche M. Haines, M.D.

Activities of the National Organization of Public Health Nurses. By Alma C. Haupt, R.N.

Activities of the American Child Health Association. By Clare E. Hayes, M.D.

Activities of the United States Public Health Service and the Rosenwald Fund. By Taliaferro Clark, M.D.

3. Factors and Causes of Fetal, Early Infant, and Maternal Morbidity and Mortality. By Hugo Ehrenfest, M.D., Assistant Professor of Obstetrics and Gynecology, Washington University Medical School.

Consideration of antenatal causes and factors, intranatal causes and factors, postnatal causes and factors, morbidity and mortality statistics.

DISCUSSION

Racial Superstitions and Customs in Relation to Pregnancy and Labor. By Frank W. Lynch, M.D.

Heart Disease. By William Worthington Herrick, M.D.

Toxemias. By George W. Kosmak, M.D.

Malignant Disease. By John A. McGlinn, M.D.

Diseases of the Endocrines and Blood. By Robert D. Mussey, M.D.

Syphilis. By James Robert McCord, M.D.

Parasitic Infections. By Edward L. King, M.D.

Acute Infectious Diseases. By J. P. Greenhill, M.D.

Oral Diseases. By George H. Wandel, D.D.S.

Forceps and Cesarean Section. By E. D. Plass, M.D.

Anesthesia and Pain Relief During Labor. By Carl Henry Davis, M.D.

Febrile Complications of the Puerperium. By William E. Caldwell, M.D.

Immediate Care of the Normal Puerperal Woman. By Charles Edwin Galloway, M.D.

Influence of Maternal Radium and Roentgen Therapeutic Irradiation Upon the Health of the Subsequent Child. By Douglas P. Murphy, M.D.

Birth Injuries of the Newly Born Infant. By Hugo Ehrenfest.

Immediate Care of the Newly Born Infant. By J. L. Baer, M.D.
Mortality and Morbidity Statistics. By Richard A. Bolt, M.D.
Comparative Statistics of United States and Foreign Countries. By Elizabeth C. Tandy, Ph.D.

4. Obstetric Teaching and Education of the Midwives. By James Robert McCord, M.D., Professor of Obstetrics and Gynecology, Emory University.

So long as midwives are necessary in some sections of the country and to care for certain racial groups, they must be trained in obstetric technic and work under medical supervision and control.

DISCUSSION

The Need for Schools to Train Midwives. By Ralph W. Lobenstine, M.D.
The Relation of the Midwife to the State Department of Health. By Felix J. Underwood, M.D.
The Relation of the Midwife to the Teaching Clinic. By Edward L. King, M.D.
The Menace of the Untrained Midwife. By Joe P. Bowdoin, M.D.

5. Obstetric Teaching and Education of Nurses and Nursing Attendants. By George W. Kosmak, M.D., Editor, American Journal of Obstetrics and Gynecology.

Report and recommendations relative to the teaching and education necessary to insure adequate nursing service to mothers and infants in homes and institutions by those engaged in this profession as institutional, public health, private duty nurses, or in other fields of nursing activities.

DISCUSSION

Obstetric Nursing for Institutions and Hospitals. By Lila J. Napier, R.N.
Obstetric Nurses for Private Duty and Other Services in the Homes. By Ann O'Loughlin, R.N.
Nurses for Public Health Work in Maternity and Infancy. By Calvina MacDonald, R.N., and Blanche Webb, R.N.
Trained Obstetric Attendants. By Edith V. Martins, R.N.

6. Teaching and Education of Laity and Social Workers. By Robert L. DeNormandie, M.D., Instructor in Obstetrics, Harvard University Medical School.

Report and recommendations regarding the subject matter and methods of instructing the laity and the stating of what and how and by whom the social worker should be taught about the problems which confront them in dealing with mothers and newly-born infants.

DISCUSSION

The Education of the Laity. By Paul Titus, M.D., and Mrs. Alfred D. Kohn.
The Teaching and Education of the Social Workers. By M. Pierce Rucker, M.D., and Kate McMahon.

7. Basic Sciences and Their Relation to Maternal and Fetal Problems. By Leslie B. Arey, Ph.D.

Report and recommendations of the committee relative to the part played by the basic sciences in the development of a program for child health and protection with suggestions for the proper fields of research requiring stimulation and support.

DISCUSSION

Eugenics in Relation to Obstetric Problems. By Paul Popenoe, Sc.D.
Embryology and Anatomy. By George W. Bartelmez, Ph.D.
Pathological Studies on the Newly Born and on Young Children. By E. T. Bell, M.D.
Bacteriology in Its Relation to Maternal and Infant Health and Life. By Arthur I. Kendall, Ph.D.
Physiology and Reproduction. By Carl G. Hartman, Ph.D.
Endocrines—Reproduction. By Edward A. Doisy, Ph.D.
Nutrition in Relation to Maternal, Fetal, and Early Infant Health and Life. By Icie G. Macy, Ph.D., J. A. Urner, M.D., and B. Raymond Hoobler, M.D.
Nephrosis and Nephritis in Relation to Maternity. By Hilding Berglund, M.D.
Pharmacology and Obstetrics. By Carl Voegtlin, Ph.D.

8. Obstetric Teaching and Education of the Physician.

1. Correlation of Instruction in the Basic Sciences with that of Obstetrics. By Leslie B. Arey, Ph.D., Professor of Anatomy, Northwestern University School of Medicine.
   a. From Viewpoint of Basic Sciences. By C. W. M. Poynter, M.D., Professor of Anatomy, University of Nebraska.
   b. From Viewpoint of Obstetrics. By J. M. H. Rowland, M.D., Dean and Professor of Obstetrics, University of Maryland School of Medicine.
2. Undergraduate Education. By Palmer Findley, M.D., President, Central Association of Obstetrics and Gynecology.
3. Graduate Education. By Rudolph W. Holmes, M.D. Associate Professor of Obstetrics, Northwestern University Medical School.
4. Education and Other Obstetric Requirements for Granting Degree of Doctor of Medicine, Licensing to Practice, and for Specialization. By Walter T. Dannreuther, M.D., Professor of Gynecology, New York Post Graduate Medical School.

AUTHORS INDEX*

A

ADAIR, FRED L., The address of the chairman of the Committee on Prenatal and Maternal Care, 767

—, The White House Conference, 442 (Editorial Comment)

ALBERT, JOYCE, (WITH MATHIEU, ALBERT, TROTMAN, FRANK E., HASKINS, HOWARD D., AND OSGOOD, EDWIN E.), The sedimentation rate in gynecology and obstetrics, 197, 591

ALLAN, R. MARSHALL, AND BRYCE, LUCY M., Epidemic of septic infection occurring in a maternity hospital, 449 (abst.)

ANDERODIAS, The modern treatment of puerperal infections, 621 (abst.)

ARBAT, New methods in the treatment of hereditary lues. The activation of the specific therapy by transfusion, 153 (abst.)

ARCHER, BENJAMIN H., AND GREENBERG, MILTON, A case of floating uterus with calcified pedunculated fibroids presenting aneurysms of the aorta and right innominate artery, 335

ARCIERI, Anesthesia of the Frankenhäuser ganglion and of the internal pudendal nerve in gynecology, 756 (abst.)

AREY, LESLIE B., The basic sciences and their relation to maternal and fetal problems, 880

AUDEBERT AND ESTIENNY, The action of spinal anesthesia on the perineum of parturient women, 759 (abst.)

B

BAILEY, V. K., Dystocia due to complete atresia of the cervix uteri, 64 (abst.)

BAIZE, (WITH DEVRAIGNE AND MAYER), A few cases of puerperal scarlet fever seen in the Lariboisière Maternity Hospital, 450 (abst.)

BALARD, P., Late hemorrhages in the postpartum period. Clinical and therapeutic study based upon 50 Bordeaux cases, 453 (abst.)

BALDWIN, L. GRANT, Primary carcinoma of the vagina in a girl of fourteen, 728

BALLIN, Pregnancy and sexual intercourse, 617 (abst.)

BAR, Coitus infection as a cause of puerperal fever, 617 (abst.)

BARTELMEZ, GEORGE W., The human uterine mucous membrane during menstruation, 623

BAUER, CARL P., Thymophysin in selected cases of uterine inertia, 411, 752

BECK, H., Puerperal endometritis following a retrograde infection through a venous thrombosis, 452 (abst.)

BEIERLEIN, KARL M., Twin papyraceous fetuses in triplet pregnancy, with report of a case, 97

BEMIS, GEORGE GORDON, (WITH LYON, EDWARD C., JR.), Study of neonatal deaths occurring in 6000 consecutive deliveries, 373 429

BENNETT, A. E., AND DOUGLASS, MARION, Krukenberg tumors of the ovary, 91

BILL, ARTHUR H., Placenta previa, 227, 420

BLAND, P. BROOKE, GOLDSTEIN, LEOPOLD, AND WEINRICH, DAVID H., Trichomonas vaginalis vaginitis in pregnancy, 365, 438

BORTS, I. H., (WITH PLASS, E. D., AND HESSELTINE, H. C.), Monilia vulvovaginitis, 320

BOWMAN, JAMES E., (WITH MURPHY, DOUGLAS P., AND WILSON, ROSS B.), The Drinker respirator treatment of the immediate asphyxia of the newborn, 528, 599

BRÉMOND, (WITH DELMAS), The preventive treatment of puerperal infection with sulpharsenol, 620 (abst.)

BRINES, OSBORNE A., (WITH DOWNER, IRA G.), Torsion of undiseased uterine adnexa in virgins, 665

BROCK, J., Uterine irrigation with alcohol during the puerperium, 574 (abst.)

BROWN, J. H., (WITH HARRIS, J. W.), The bacterial contents of vagina and uterus on the fifth day of the normal puerperium, 497 (abst.)

*January, pp. 1-156; February, pp. 157-300; March, pp. 301-454; April, pp. 455-622; May, pp. 623-764; June, pp. 765-904.

BRÜGELMANN, C., Observations on puerperal sepsis especially concerning the localization and frequency of metastases, 450 (abst.)

BRYCE, LUCY M., Some observations on the bacterial flora of the female genital passages in pregnancy and the puerperium, with special reference to puerperal infection, 616 (abst.)

—, (WITH ALLAN, R. MARSHALL), Epidemic of septic infection occurring in a maternity hospital, 449 (abst.)

BUBICHENKO, Bezredka's antivirus in prognosis and prophylaxis of puerperal sepsis, 620 (abst.)

BURCH, JOHN C., (WITH BURCH, LUCIUS E), Mortality in hysterectomy operations, 704

BURCH, LUCIUS E., AND BURCH, JOHN C., Mortality in hysterectomy operations, 704

BURGER, P., Joint metastasis in puerperal infection, 451 (abst.)

C

CALKINS, L. A., Report of Committee on Maternal Welfare of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, 290, 417

—, LITZENBERG, J. C., AND PLASS, E. D., Management of the third stage of labor with special reference to blood loss, 175, 420

CARABBA, VICTOR, (WITH SOVAK, FRANCIS W.), Hemangioendothelioma intravasculare of the ovary, 544, 597

CAVERLY, CHARLES E., Ovarian cyst complicating pregnancy, 566, 598

CHALIER, J., AND ROUSSET, J., Puerperal tetanus, 452 (abst.)

CHANDLER, GEORGE F., Matin sleep, 285, 589

CHYDENIUS, J. J., The operative treatment of generalized abortal peritonitis, 497 (abst.)

CLAYE, A. M., The puerperal morbidity rate in patients delivered normally, 448 (abst.)

CONNELL, J. S. M., The use of avertin in childbirth, 760 (abst)

COOKE, WILLARD R., Report of Committee on Maternal Welfare of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, 290, 417

CORYLLOS, POL N., Atelectasis, asphyxia and resuscitation in the newborn, 512, 600

COSGROVE, Spinal anesthesia in obstetrics, 758 (abst.)

CRAWFORD, WILLIAM H., (WITH TYSON, RALPH M.), Intracranial hemorrhage of the newborn, 694

CROTHERS, BRONSON, The mechanism of labor from the neurologist's point of view, 526, 600

CULLEN, THOMAS S., The training of the gynecologist, 389 (abst.)

D

DALRYMPLE, S. C., Thrombosis of the interlobular arteries of the kidneys in pregnancy, 115 (abst.)

DELMAS AND BRÉMOND, The preventive treatment of puerperal infection with sulpharsenol, 620 (abst.)

DEJARDIN, (WITH MAYER), Clinical considerations of the surgery of the pelvic-utero-adnexal sympathetics, 233 (abst.)

DEVRAIGNE, BAIZE, AND MAYER, A few cases of puerperal scarlet fever seen in the Lariboisière Maternity Hospital, 450 (abst.)

—, SAUPHAR, AND MAYER, Treatment of puerperal infection with intravenous injections of aseptic pus, 657 (abst.)

DOEDERLEIN, Radiotherapy and progenity, 152 (abst.)

DOUGLAS, R. GORDON, (WITH GUTTMACHER, ALAN F.), Induction of labor by artificial rupture of the membranes, 485

DOUGLASS, MARION, (WITH BENNETT, A. E.), Krukenberg tumors of the ovary, 91

DOWNER, IRA G., AND BRINES, OSBORNE A., Torsion of undiseased uterine adnexa in virgins, 665

E

EASTMAN, NICHOLSON J., The arsenic content of the human placenta following arsphenamine therapy, 60

EDEN, T. WATTS, National inquiry into the causes of high maternal mortality rate, 446 (abst.)

EDWARDS, GEORGE, Avertin narcosis, 760 (abst.)

EHRENFEST, HUGO, Factors and causes of fetal, newly born, and maternal morbidity and mortality, 867

EKAS, WARD L., Traumatic separation of the symphysis pubis, 680

EMMER, S. WOLFE, (WITH GORDON, A. J.), The Bercovitz test in pregnancy, 723

ESTIENNY, (WITH AUDEBERT), The action of spinal anesthesia on the perineum of parturient women, 759 (abst.)

F

FAIRBAIRN, Sedatives in labor, particularly "twilight sleep," 761 (abst.)

FALK, HENRY C., A case of intraabdominal hemorrhage from rupture of a uterine vein during pregnancy, 118

FAUGÈRE, Artificial dilatation under spinal anesthesia, 758 (abst.)

FERMO, CESARE DE, Experimental studies on anesthesia, 756 (abst.)

FERRARI, (WITH LAFFONT AND HOUEL), Seven cases of ligation of the vena cava. New observations on suppurative uteropelvic phlebitis, 497 (abst.)

—, AND HOUEL, Subtotal abdominal hysterectomy and venous ligation in puerperal infection, 664 (abst.)

FINDLEY, PALMER, The teaching of obstetrics and maternal mortality, 390

—, The undergraduate teaching of obstetrics, 783

FISCHER, Radiotherapy and progenity, 152 (abst.)

FLAGG, PALUEL J., The treatment of postnatal asphyxia, 537, 600

FLUHMANN, C. F., AND MORSE, DOROTHY L., Studies on uterine hemorrhage. Relation of the hemorrhage to the events of the menstrual cycle and to the pathologic findings, 455

FLUSSER, E., Vulvitis aphthosa, 268 (abst.)

FOGELSON, SAMUEL J., (WITH GOLDSTINE, MARK T.), The treatment of "irregular uterine hemorrhage" by the female sex hormone, 464

FRAENKEL, O., Late postpartum and postabortal hemorrhage, 454 (abst.)

FRANK, CHARLES W., AND KUSHNER, J. IRVING, Obstetric mortality. An analysis of 2268 maternity cases at the Bronx Hospital, 708

FREEDMAN, NATHAN, Age period changes in the cervix uteri, with special reference to cancer development, 1

FREUND AND SCHMITT, The influence of ultraviolet irradiation of the mother on the constitution of the newborn, 151 (abst.)

FRIEDMAN, MAURICE H., AND LAPHAM, MAXWELL E., A simple, rapid procedure for the laboratory diagnosis of early pregnancies, 405

FULCONIS, (WITH LAFFONT), The prognostic and specific value of the intradermal reaction to the streptococcic filtrate in puerperal infection, 618 (abst.)

G

GALLOWAY, CHARLES EDWIN, Postpartum care, 558, 599

GAMMELTOFT, S. A., A case of encephalitis hemorrhagica after salvarsan treatment during pregnancy, 153 (abst.)

GARVIN, CHARLES H., Spontaneous evacuation of pyosalpinx through the uterus, 741

GAUTRET, Three cases of rapid labor under spinal anesthesia, 758 (abst.)

GIBBERD, G. F., A contribution to the study of the maternal death rate, 416

GIDALEWITSCH, N. A., The puerperium after plural births, 448 (abst.)

GILL, JOHN JOSEPH, A case of pregnancy complicated by multiple fibroids of the uterus, 137

GLASS, M., (WITH WELTON, THURSTON, AND MAZZOLA, V. P.), Obstetrical morbidity and end-results, 263, 575

GOLDSTEIN, LEOPOLD, (WITH BLAND, P. BROOKE, AND WENRICH, DAVID H.), Trichomonas vaginalis vaginitis in pregnancy, 365, 438

GOLDSTINE, MARK T., AND FOGELSON, SAMUEL J., The treatment of "irregular uterine hemorrhage" by the female sex hormone, 464

GORDON, A. J., AND EMMER, S. WOLFE, The Bercovitz test in pregnancy, 723

GREENBERG, MILTON, (WITH ARCHER, BENJAMIN H.), A case of floating uterus with calcified pedunculated fibroids presenting aneurysms of the aorta and right innominate artery, 335

GUTTMACHER, ALAN F., AND DOUGLAS, R. GORDON, Induction of labor by artificial rupture of the membranes, 485

GWATHMEY, JAMES T., Obstetrical analgesia, 761 (abst.)

H

HALBAN, J., The control of pain in obstetrics and gynecology, 757 (abst.)

—, AND SPITZER, M. Z., The increased growth of the nails during pregnancy, 274 (abst.)

HAMBLEN, E. C., AND HAMBLIN, D. O., The oral administration of sodium iso-amylethyl barbiturate (sodium amytal) in labor, 715
HAMBLIN, D. O., (WITH HAMBLEN, E. C.), The oral administration of sodium iso-amylethyl barbiturate (sodium amytal), in labor, 715
HAMBLOCK, LEONARD C., Two cases of acute puerperal uterine inversion, 434
HANSON, SAMUEL, A simplified method of introducing the carbon dioxide in the tubal patency test, 749
HARPER, PAUL T., Application of forceps extraction, 280, 575
HARRIS, J. W., AND BROWN, J. H., The bacterial contents of vagina and uterus on the fifth day of the normal puerperium, 497 (abst.)
HART, DEAN W., A case of uterus unicornis with rudimentary left uterus and right ectopic pregnancy, 131
HARTLEY, E. C., The tetanoid syndrome and its relation to menstrual cramps, 725
HARVEY, HARRY EVANS, A study of the hemoglobin, cell volume per cent and red cell count, intrapartum and postpartum, with observations on relation to morbidity, 476
HASKINS, HOWARD D., (WITH MATHIEU, ALBERT, TROTMAN, FRANK E., OSGOOD, EDWIN E., AND ALBERT, JOYCE), The sedimentation rate in gynecology and obstetrics, 197, 591
HEIM, K., Local anesthesia in obstetrics and gynecology, 757 (abst.)
HENDERSON, YANDELL, The inhalational method of resuscitation from asphyxia of the newborn, 542, 600
HENDRY, W. B., Hemorrhage in the early months of pregnancy, 211, 420
HENRICK, ABRAHAM, Hemorrhage into hydatid of morgagni simulating acute appendicitis, 120
HESSELTINE, H. C., (WITH PLASS, E. D., AND BORTS, I. H.), Monilia vulvovaginitis, 320
HOBBS, A. REMINGTON, Puerperal sepsis, 445 (abst.)
HOFBAUER, J., Treatment of pyelitis gravidarum, 279 (abst.)
HOLMES, RUDOLPH W., Graduate education of physicians in obstetrics, 809
HORTON, JAMES C., (WITH RABINOVITCH, JACOB), Primary carcinoma of the fallopian tube, 689
HOUEL, (WITH FERRARI), Subtotal abdominal hysterectomy and venous ligation in puerperal infection, 664 (abst.)
—, (WITH LAFFONT AND FERRARI), Seven cases of ligation of the vena cava. New observations on suppurative uteropelvic phlebitis, 497 (abst.)
HYAMS, MORTIMER N., A new cannula for transuterine tubal insufflation, 746

I

ISBRUCH, F., The absence of pathologic organisms in the uterine cavity in pregnancy, 356 (abst.)
IVY, A. C., (WITH RUDOLPH, LOUIS), The coordination of the uterus in labor, 65, 141

J

JACOBS, J. BAY, A rachitic naegele type pelvis with faulty inclination and marked spinal deformity, 125
JAMESON, Tuberculosis of the female pelvis, 226 (abst.)
JEANNIN, C., AND SUREAU, M., Statistics of puerperal infection, 447 (abst.)
JENNINGS, DAVID R., Hyoscine amnesia in labor, 761 (abst.)
JONES, E. M., Affections of the round ligament with a report of a case of double tuberculous hydrocele, 196 (abst.)
JONES, THOMAS E., A comparison of the results of surgery and of radiation in the treatment of cancer of the cervix, 187

K

KAPLAN, IRA I., The radiation treatment of amenorrhea and sterility. With a report of cases so treated, 52
KELLOGG, FOSTER S., Observations on toxemic nephritic group cases, with special reference to classification, 275, 581
KLAFTEN, E., The treatment of newborn infants of syphilitic mothers, 153 (abst.)
KLOPSTOCK, (WITH SOLMS), The pregnancy test of Aschheim and Zondek and its significance in the differential diagnosis of amenorrheic and climacteric disturbances, 372 (abst.)
KNOX, J. H. MASON, A survey of maternal deaths in Maryland, 143
KOSMAK, GEORGE W., Obstetric training of nurses and attendants, 828
—, Viewpoint of the obstetrician in asphyxia neonatorum, 600

KRAUL, L., Certain new observations on the action of the anterior pituitary, 301

KUSHNER, J. IRVING, Pregnancy as a complication of neurofibromatosis, 116

—, (WITH FRANK, CHARLES W.), Obstetric mortality. An analysis of 2268 maternity cases at the Bronx Hospital, 708

L

LAFFONT AND FULCONIS, The prognostic and specific value of the intradermal reaction to the streptococcic filtrate in puerperal infection, 618 (abst.)

—, HOUEL, AND FERRARI, Seven cases of ligation of the vena cava. New observations on suppurative uteropelvic phlebitis, 497 (abst.)

LANE-ROBERTS, C. S., Abdominal pain in pregnancy, 295 (abst.)

LANGHORST, HENRY F., Prevention of puerperal infections, 543 (abst.)

LAPHAM, MAXWELL E., (WITH FRIEDMAN, MAURICE H.), A simple, rapid procedure for the laboratory diagnosis of early pregnancies, 405

LE LORIER, A few successful results with intravenous injections of novarsenobenzol in puerperal sepsis, 620 (abst.)

LITZENBERG, J. C., (WITH CALKINS, L. A., AND PLASS, E. D.), Management of the third stage of labor with special reference to blood loss, 175, 420

LYON, EDWARD C., JR., AND BEMIS, GEORGE GORDON, Study of neonatal deaths occurring in 6000 consecutive deliveries, 373, 429

Mc

MCCONNELL, W. T., Venoclysis, the continuous intravenous administration of glucose, 250, 581

MCCORD, JAMES R., The education of midwives, 837

M

MATHIEU, ALBERT, TROTMAN, FRANK E., HASKINS, HOWARD D., OSGOOD, EDWIN E., AND ALBERT, JOYCE, The sedimentation rate in gynecology and obstetrics, 197, 591

MAYER, MAX D., Psychotherapy in a gynecologic service, 357, 430

MAYER AND DEJARDIN, Clinical considerations of the surgery of the pelvic-utero-adnexal sympathetics, 233 (abst.)

MAYER, (WITH DEVRAIGNE AND BAIZE), A few cases of puerperal scarlet fever seen in the Lariboisière Maternity Hospital, 450 (abst.)

—, (WITH DEVRAIGNE AND SAUPHAR), Treatment of puerperal infection with intravenous injections of aseptic pus, 657 (abst.)

MAZZOLA, VINCENT P., (WITH POLAK, JOHN OSBORN), Effects of experimental torsion of uterus on the vessels of parametrium and contiguous tissues, 658

—, (WITH WELTON, THURSTON, AND GLASS, M.), Obstetrical morbidity and end-results, 263, 575

MESHBERG, PAUL, An analysis of 128 interposition operations, 398

METZGER, Some observations of dystocia labor under spinal anesthesia, 759 (abst.)

MICHAEL, WILLIAM A., Pregnancy in uterus bicornis unicollis with the child occupying one horn and the placental site a portion of both, 133

MILLER, DOUGLAS, AND WHITAKER, J. R., A study of the bactericidal power of blood during pregnancy and puerperium, and its relationship to the development and course of puerperal infection, 617 (abst.)

MISSETT, JOSEPH V., A case of primary tuberculosis of the cervix, 431

MONTGOMERY, THADDEUS L., The etiology and significance of necrosis (infarction) of the placenta; a biologic and histologic study, 157, 579

MORSE, DOROTHY L., (WITH FLUHMANN, C. F.), Studies on uterine hemorrhage. Relation of the hemorrhage to the events of the menstrual cycle and to the pathologic findings, 455

MURPHY, DOUGLAS P., WILSON, ROSS B., AND BOWMAN, JAMES E., The Drinker respirator treatment of the immediate asphyxia of the newborn, 528, 599

MUSSATOW, N. A., Intrauterine instillations in gynecologic therapy, 334 (abst.)

N

NAUJOKS, The value of avertin, 760 (abst.)

NELMS, WILLIAM F., A review of the treatment of the cases of placenta previa at the Brooklyn Hospital for the past ten years, 550, 604

NEWELL, QUITMAN U., A new method for determining the patency of the tubes in the course of abdominal operations, 414, 588
NOKES, JOHN M., Report of fatal case of chemical hysterectomy, 744

O

OKU, M., Painless labor by local anesthesia, 758 (abst.)
—, Pudendal anesthesia in the domain of obstetrics, 757 (abst.)
OSGOOD, EDWIN E., (WITH MATHIEU, ALBERT, TROTMAN, FRANK E., HASKINS, HOWARD D., AND ALBERT, JOYCE), The sedimentation rate in gynecology and obstetrics, 197, 591

P

PARKS, T. J., Report of two cases of twin pregnancy with early death of one fetus, 112
PAROLI, Viscero-cutaneous pain in gynecology and obstetrics and its relief by local subcutaneous anesthesia, 756 (abst.)
PECKHAM, C. H., A statistical study of placenta previa at the Johns Hopkins Hospital, 39
PEDERSEN, VICTOR C., A case of chronic menorrhagia cured by galvanic dilatation and zinc chloride ionization, 122
PEIG, J. C., Diversity of invasion by the treponema in a case of twins, 152 (abst.)
PERKINS, PERCY A., Hemiplegia complicating pregnancy, 135
PETERSON, L. S., Causes of death in the puerperium, 447 (abst.)
PFALZ, G. J., The influence of specific and nonspecific protein bodies on the bactericidal power of the blood in staphylococcic and gonorrheal infections of the female generative organs, 620 (abst.)
PHANEUF, LOUIS E., The cervical cesarean section. A report of the end-results of 418 consecutive operations, 498, 597
PISTUDDI, Forced and accelerated parturition in spinal anesthesia with special reference to the method of Delmas, 759 (abst.)
PLASS, E. D., Observations on the functional menstrual disturbances of adolescents, 205, 586
—, HESSELTINE, H. C., AND BORTS, I. H., Monilia vulvovaginitis, 320
—, (WITH CALKINS, L. A., AND LITZENBERG, J. C.), Management of the third stage of labor with special reference to blood loss, 175, 420
POLAK, JOHN OSBORN, Accidental hemorrhage ablatio placentae, 218, 420
—, Maternal and early infant care, 852
—, AND MAZZOLA, VINCENT P., Effects of experimental torsion of uterus on the vessels of parametrium and contiguous tissues, 658
POLAYES, SILIK H., AND SOIFER, JACQUES D., A case of nosencephalus with eventration of the abdominal and chest organs, polyhydramnios, and other anomalies, 109
POLZL, A., Use of irradiated fat in gynecology, 25 (abst.)
POTTER, I. W., Report of Committee on Maternal Welfare of the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, 290, 417

Q

QUIGLEY, JAMES K., Pregnancy and labor in the elderly primipara, 234, 575

R

RABINOVITCH, JACOB, AND HORTON, JAMES D., Primary carcinoma of the fallopian tube, 689
RERRHUN, E., Kraurosis vulvae, 217 (abst.)
ROBINSON, A. L., AND CUTTLE, G. E., Infectious puerperal fever, 449 (abst.)
RONGY, A. J., Vaginal repair, 269, 580
ROSENFELD, SAMUEL S., The place of the Porro operation in modern obstetrics, 556
ROUFFART, Sympathectomy in gynecology, 139 (abst.)
ROUSSET, J., (WITH CHALIER, J.), Puerperal tetanus, 452 (abst.)
ROWE, ALLAN WINTER, Some functional criteria of normal pregnancy, 644
RUDOLPH, LOUIS, AND IVY, A. C., The coordination of the uterus in labor, 65, 141
RYBERG, C. M., Some experiences concerning placental fragments at parturition, 453 (abst.)

S

SAENGER, HANS, Puerperal gangrene in septic conditions and gynergen medication, 451 (abst.)
SAKUMA, H., Experimental study on the exeretory function of the uterine mucosa. Part III. Biological observation, 289 (abst.)
SALMOND, MARGARET, AND TURNER, BEATRICE, The Dick test in pregnancy, 619 (abst.)

SAUPHAR, (WITH DEVRAIGNE AND MAYER), Treatment of puerperal infection with intravenous injections of aseptic pus, 657 (abst.)

SCHMITT, (WITH FREUND), The influence of ultraviolet irradiation of the mother on the constitution of the newborn, 151 (abst.)

SCHMITZ, HENRY, Choriomas, 256, 593

SCHNEIDER, LOUIS, The miostagmin reaction in the diagnosis of uterine cancer, 340

SCHOCHET, SYDNEY, (WITH TEMPLETON, R. D., AND STEIN, IRVING), Studies in the physiology and pharmacology of the human vagina, 754

SCHUMACHER, P., Causes of postoperative and puerperal thrombosis and embolism, 451 (abst.)

SCHUMANN, EDWARD A., Report of the Committee of the Obstetrical Society of Philadelphia upon the incidence and treatment of the toxemia of late pregnancy in Philadelphia, 381, 439

SHAPIRO, PHILLIP F., Rhabdomyosarcoma of the corpus uteri, 83

SHNAYERSON, NED, A simple method of vaginal illumination, 748

SKAJAA, K., Cessation of the coagulation of blood in postpartum hemorrhage, "shock bleeding," 364 (abst.)

SMITH, FRANK R., Etiologic factors in carcinoma of the cervix, 18

SOIFER, JACQUES D., (WITH POLAYES, SILIK H.), A case of nosencephalus with eventration of the abdominal and chest organs, polyhydramnios, and other anomalies, 109

SOLMS AND KLOPSTOCK, The pregnancy test of Aschheim and Zondek and its significance in the differential diagnosis of amenorrheic and climacteric disturbances, 372 (abst.)

SOVAK, FRANCIS W., AND CARABBA, VICTOR, Hemangio-endothelioma intravasculare of the ovary. A review of the literature with a report of a case, 544, 597

SPITZER, M. Z., (WITH HALBAN, J.), The increased growth of the nails during pregnancy, 274 (abst.)

STEIN, IRVING, An unusual ovarian tumor, 140

—, Eight years' experience with roentgen diagnosis in gynecology, pneumoperitoneum and lipiodol in pelvic diagnosis, 671

STEIN, IRVING, (WITH TEMPLETON, R. D., AND SCHOCHET, SYDNEY), Studies in the physiology and pharmacology of the human vagina, 754

STENT, LOIS, The Dick test in relation to incidence of puerperal infection, 619 (abst.)

STIEGLITZ, EDWARD J., Nephritis in pregnancy, 26

SUREAU, M., (WITH JEANNIN, C.), Statistics of puerperal infection, 447 (abst.)

T

TASSOVATZ, S., Spinal anesthesia for the low cesarean section, 759 (abst.)

TEMPLETON, R. D., STEIN, IRVING, AND SCHOCHET, SYDNEY, Studies in the physiology and pharmacology of the human vagina, 754

TEOUMINE, S., The blood platelets in the prognosis of puerperal sepsis, 618 (abst.)

THOLEN, G. A., The treatment of postoperative and puerperal thrombosis and embolism, 511 (abst.)

THOMPSON, BASIL, A new stitching device, 750

TROTMAN, FRANK E., (WITH MATHIEU, ALBERT, HASKINS, HOWARD D., OSGOOD, EDWIN E., AND ALBERT, JOYCE), The sedimentation rate in gynecology and obstetrics, 197, 591

TURNER, BEATRICE, (WITH SALMOND, MARGARET), The Dick test in pregnancy, 619 (abst.)

TYSON, RALPH M., AND CRAWFORD, WILLIAM H., Intracranial hemorrhage of the newborn, 694

U

UNTERBERGER, Damage to the fetus through repeated exposures to roentgen ray during pregnancy, 151 (abst.)

V

VAN WYCK, H. B., The treatment of hyperemesis gravidarum, 243, 581

W

WEINBERG, ARTHUR A., Aniline poisoning in the newborn, with a report of thirteen cases, 104

—, Combined pregnancy, with report of a case, 735

WEINZIERL, E., Total gangrene of the puerperal uterus, 451 (abst.)

WELTON, THURSTON, GLASS, M., AND MAZZOLA, V. P., Obstetrical morbidity and end-results, 263, 575

WENRICH, DAVID H., (WITH BLAND, P. BROOKE, AND GOLDSTEIN, LEOPOLD), Trichomonas vaginalis vaginitis in pregnancy, 365, 438

WHITAKER, J. R., (WITH MILLER, DOUGLAS), A study of the bactericidal power of the blood during pregnancy and the puerperium, and its relationship to the development and course of puerperal infection, 617 (abst.)

WHITE, Puerperal and abortion sepsis, 448 (abst.)

WHITE, H. BURT, Puerperal sepsis and sensitiveness to streptococcal toxins, 619 (abst.)

WILLIAMS, TIFFANY J., Mono-amniotic twins with twisted cords, 129

WILSON, ROSS B., (WITH MURPHY, DOUGLAS P., AND BOWMAN, JAMES E.), The Drinker respirator treatment of the immediate asphyxia of the newborn, 528, 599

WODEN, What procedure should be adopted for retention of products of conception? 452 (abst.)

WOZAK, J., Prophylactic and therapeutic use of the Warnekros serum in cases of puerperal fever, 555 (abst.)

Y

YOUNG, JAMES, Maternal mortality from puerperal sepsis, 445 (abst.)

Z

ZWEIFEL, E. H., A new obstetric forceps, 138

SUBJECT INDEX*

A

Abdominal hysterectomy, subtotal and venous ligation in puerperal infection, (Ferrari and Houel), 664 (abst.)
pain in pregnancy, (Lane-Roberts), 295 (abst.)

Ablatio placentae, (Polak); 218, 420

Abortal peritonitis, generalized, operative treatment of, (Chydenius), 497 (abst.)

Abortion as cause of fetal death, (Adair), 770
maternal deaths, (Adair), 771
cases of, in hospitals, (Findley), 798
hemorrhage in, (Hendry), 212
in early months of pregnancy, (Hendry), 211
in elderly primiparae, (Quigley), 236
in United States, (Ehrenfest), 868
induced, as cause of cancer, (Smith, F. R.), 25
legalized in Russia, (Adair), 771; (Ehrenfest), 867
malaria as cause of, (Ehrenfest), 873
or premature labors, parasitic diseases as cause of, (Ehrenfest), 872
pain in, (Hendry), 212
prevention of, in malaria, (Ehrenfest), 873
sedimentation rate in, (Mathieu, et al.), 200
sepsis, (White), 448 (abst.)
systematic reports of, to health officers, failure to enforce, (Ehrenfest), 867
therapeutic, (Adair), 771
in hyperemesis gravidarum, (Van Wyck), 246
treatment of, (Hendry), 213

Acidosis in pregnancy, (Stieglitz), 35

Adolescents, menstrual disturbances of, observations on the functional, (Plass), 205, 586

Age period changes in the cervix uteri, (Freedman), 1

Alcohol, uterine irrigation with, during puerperium, (Brock), 574 (abst.)

Alveolar carbon dioxide during pregnancy, (Rowe), 655

Amenorrhea, continuous bleeding following period of, (Fluhmann and Morse), 461
radiation treatment of, (Kaplan), 52

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, transactions of, 417, 575
Board of Obstetrics and Gynecology, announcement of examinations by, 154
certificate holders, 296
item, 622, 764

Analgesia, obstetrical, (Gwathmey), 761 (abst.)

Anatomy of uterus, comparative, (Rudolph and Ivy), 71

Anemia in pregnancy (Stieglitz), 35; (Harvey), 476; (Ehrenfest), 872
following delivery, (Galloway), 562

Anesthesia, avertin in childbirth, (Connell), 760 (abst.)
narcosis, (Edwards), 760 (abst.)
value of, (Naujoks), 760 (abst.)
experimental studies on, (Fermo), 756 (abst.)
hyoscine amnesia in labor, (Jennings), 761 (abst.)
local, in obstetrics and gynecology, (Heim), 757 (abst.)
painless labor by, (Oku), 758 (abst.)
matin sleep, (Chandler), 285, 589
of Frankenhäuser ganglion in gynecology, (Arcieri), 756 (abst.)
of internal pudendal nerve in gynecology, (Arcieri), 756 (abst.)
pudendal, in obstetrics, (Oku), 757 (abst.)
selected abstracts, 756
spinal, action of, on perineum of parturient women, (Audebert and Estienny), 759 (abst.)
artificial dilatation under, (Faugère), 758 (abst.)
dystocia labor under, (Metzger), 759 (abst.)
for low cesarean section, (Tassovatz), 759 (abst.)
in obstetrics, (Cosgrove), 758 (abst.)
rapid labor under, (Gautret), 758 (abst.)
twilight sleep in labor, (Fairbairn), 761 (abst.)
viscero-cutaneous pain in gynecology and obstetrics relieved by, (Paroli), 756 (abst.)

Anhydremia, acute, in hyperemesis gravidarum, (Van Wyck), 245

*January, pp. 1-156; February, pp. 157-300; March, pp. 301-454; April, pp. 455-622; May, pp. 623-764; June, pp. 765-904.

Aniline poisoning in the newborn, (Weinberg), 104
Anterior lobe of the hypophysis, (Arey), 886
pituitary, action of, new observations on, (Kraul), 301
Aorta, aneurysm of, case of floating uterus with calcified pedunculated fibroids presenting, (Archer and Greenberg), 335
Appendicitis, acute, hemorrhage into hydatid of Morgagni simulating, (Heinrich), 120
Arsenic content of human placenta following arsphenamine therapy, (Eastman), 60
Arsphenamine therapy, arsenic content of human placenta following, (Eastman), 60
Arterial hypertension in pregnancy, (Stieglitz), 36
Aschheim and Zondek, pregnancy test of, in differential diagnosis of amenorrheic and climacteric disturbances, (Solms and Klopstock), 372 (abst.)
Asphyxia of newborn, (Coryllos), 512, 600; (Ehrenfest), 875
Drinker respirator treatment of immediate, (Murphy, Wilson, Bowman), 528, 599
inhalational method of resuscitation from, (Henderson), 542, 600
neonatorum, viewpoint of obstetrician in, (Kosmak), 600
postnatal, treatment of, (Flagg), 537, 600
Asthenia, sedimentation rate in, (Mathieu, et al.), 201
Atelectasis of newborn, (Coryllos), 512, 600
Atresia, complete, of cervix uteri, dystocia due to, (Bailey), 64 (abst.)
Avertin in childbirth, (Connell), 760 (abst.)
narcosis, (Edwards), 760 (abst.)
value of, (Naujoks), 760 (abst.)

B

Babies, weight of, of elderly primiparae, (Quigley), 240
Bacterial contents vagina and uterus fifth day of normal puerperium, (Harris and Brown), 497 (abst.)
flora of the female genital passages in pregnancy and puerperium, (Bryce), 616 (abst.)
Bactericidal power of blood, influence of specific and nonspecific protein bodies on, in staphylococcic and gonorrheal infections of female generative organs, (Pfalz), 620 (abst.)
Barton forceps, cephalic application, (Harper), 282
Basal metabolic rate in functional menstrual disturbances of adolescents, (Plass), 205, 586
Basic sciences and their relation to maternal and fetal problems, (Arey), 880
Bezredka's antivirus in puerperal sepsis, (Bubichenko), 620 (abst.)
Bercovitz test in pregnancy, (Gordon and Emmer), 723
Biology of infection, missing links in, (Arey), 888
Birth certificates, proper filling of, (Adair), 767
injuries, children crippled from, in United States, (Adair), 768
Births, plural, puerperium after, (Gidalewitsch), 448 (abst.)
B. Kroenig's geburtschilflicher phantomkurs in frage und antwort, 615 (book review)
Bladder, postpartum, care of, (Galloway), 561
Bleeding, irregular, atypical, (Fluhmann and Morse), 461
ovulation, (Fluhmann and Morse), 460
postclimacteric, (Fluhmann and Morse), 462
Blind, number of children in United States totally or partially, as result of syphilis or gonorrhea, (Adair), 768
Blindness of infants eliminated by adequate prenatal and postnatal care, (Adair), 768
Blood, bactericidal power of, during pregnancy and puerperium, (Miller and Whitaker), 617 (abst.)
chemistry during pregnancy, (Rowe), 650
in toxemia of pregnancy, (Schumann), 385
coagulation, cessation of, in postpartum hemorrhage, (Skajaa), 364 (abst.)
counts in toxemia of pregnancy, (Schumann), 386
findings at termination of pregnancy, (Harvey), 476
loss in placenta previa, (Bill), 229
management of third stage of labor, with special reference to, (Calkins, et al.), 175, 420
platelets in prognosis of puerperal sepsis, (Teoumine), 618 (abst.)
morphology during pregnancy, (Rowe), 652
pressure findings in toxemia of pregnancy, (Schumann), 384
sugar in toxemia of pregnancy, (Schumann), 386
stream infection following hysterectomy operation, (Burch and Burch), 705
transfusion in placenta previa, (Bill), 230

Bony pelvis, diet in relation to the development of, (Arey), 897
Books received, 300, 763
Book reviews, 607
Bowel, postpartum, care of, (Galloway), 561
Braxton-Hicks version in placenta previa, (Bill), 227
treatment of placenta previa by (Nelms), 552
Brooklyn Gynecological Society, Transactions of, 604

C

Cancer as complication of pregnancy, (Ehrenfest), 870
development, age period changes in the cervix uteri, with special reference to, (Freedman), 1
of cervix, treatment of, comparison of results of surgery and of radiation in, (Jones, T. E.), 187, 595
uterine, miostagmin reaction in diagnosis of, (Schneider), 340
radium treated, follow-up of, (Schneider), 344
Cannula for transuterine tubal insufflation, a new, (Hyams), 746
Carbohydrate deficiency in hyperemesis gravidarum, (Van Wyck), 244
Carcinoma of fallopian tube, primary, (Rabinovitch and Horton), 689
of cervix, etiologic factors in, (Smith, F. R.), 18
of uterus, age incidence of, (Baldwin), 728
of vagina, age incidence, (Baldwin), 728
of vulva, (Baldwin), 728
Cardiac failure during pregnancy, (Ehrenfest), 870
Cell volume per cent, intrapartum and postpartum, relation of, to morbidity, (Harvey), 476
Cephalic application of forceps, (Harper), 280, 575
Certification of specialists, 148 (editorial comments)
Cervical bag, use of, in placenta previa, (Bill), 227
cesarean section, (Phaneuf), 498, 597
erosion, sedimentation rate in, (Mathieu, et al.), 203
Cervicitis, as cause of cancer of cervix, (Smith, F. R.), 23
Cervix, cancer of, treatment of, comparison of results of surgery and of radiation in, (Jones, T. E.), 187, 595
carcinoma of the, etiologic factors in, (Smith, F. R.), 18
erosion of, (Freedman), 6
tuberculosis of, primary, (Missett), 431
Cervix—Cont'd
uteri, age period changes in, (Freedman), 1
Cesarean section, (Ehrenfest), 874
cervical, (Phaneuf), 498, 597
cases of, in hospitals, (Findley), 803
classic, cases of, in hospitals, (Findley), 803
low, spinal anesthesia for, (Tassovatz), 758 (abst.)
in elderly primiparae, (Quigley), 239
in placenta previa, (Bill), 227
treatment of placenta previa by, (Nelms), 553
Chemical hysterectomy, fatal case of, (Nokes), 744
Chicago Gynecological Society, transactions of, 140, 752
Child health and protection, White Conference on, 765
Childbirth, avertin in, (Connell), 760 (abst.)
Children, totally or partially blind, number of in United States, as cause of syphilis or gonorrhea, (Adair), 768
Choriomas, (Schmitz), 256, 593
Clinic patient, care of, (Polak), 863
Coitus infection as cause of puerperal fever, (Bar), 617 (abst.)
Monilia vulvovaginitis following, (Plass, Hesseltine, Borts), 321
Collected publications, Robert Dawson Evans Memorial, 615 (book review)
Conception, products of, what procedure should be adopted for retention of, (Woden), 452 (abst.)
Contraception, advice concerning, (Ehrenfest), 878
Contraceptive methods, instruction of student body with, (Findley), 805
Contraceptives, use of, as cause of cancer of cervix, (Smith, F. R.), 22
Contracted pelvis, as complication in labor, (Findley), 798
Convulsions in toxemia of pregnancy, (Schumann), 383
Corpus uteri, rhabdomyosarcoma of the, (Shapiro), 83
Correspondence, 154
Crippled children, number of, in United States, from birth, (Adair), 768
Cyst, ovarian, complicating pregnancy, (Caverly), 566, 598
sedimentation rate in, (Mathieu, et al.), 203
Cystocele, sedimentation rate in, (Mathieu, et al.), 203

D

Death certificate, proper filling out, (Adair), 768
Dehydration in hyperemesis gravidarum, (Van Wyck), 245
Deliveries, forceps, (Findley), 802
operative, in hospitals, (Findley), 802
6000 consecutive, neonatal deaths in, (Lyon and Bemis), 373, 429
spontaneous, after artificial rupture of membranes, (Guttmacher and Douglas), 489
Delivery, anemia following, (Galloway), 562
artificial, increase of, in hospital practice, (Ehrenfest), 874
forceps extraction, application of, (Harper), 280, 575
high forceps, (Harper), 283
in elderly primiparae, (Quigley), 239
normal, puerperal morbidity rate following, (Claye), 448 (abst.)
of diabetic patient, (Ehrenfest), 872
pain following, treatment of, (Galloway), 561
sleep following, (Galloway), 561
version, in elderly primiparae, (Quigley), 238
Dental hygiene in prenatal clinics, (Polak), 860
Der einfluss des geschlechts verkehrs auf das befinden der Frau, 615 (book review)
Diabetes and pregnancy, (Ehrenfest), 871
Dick test in pregnancy, (Salmond and Turner), 619 (abst.)
in relation to incidence of puerperal infection, (Stent), 619 (abst.)
Die wechselbeziehungen zwischen der Tuberkiloseerkrankung und den Generationsvorgaengen im weiblichen organismus, 615 (book review)
Diet during pregnancy, (Arey), 894
Dilatation, artificial, under spinal anesthesia, (Faugère), 758 (abst.)
Diuresis in hyperemesis gravidarum, (Van Wyck), 245
Douche, lysol, as cause of cancer of cervix, (Smith, F. R.), 22
types of, as cause of cancer, (Smith, F. R.), 22
Drinker respirator treatment of immediate asphyxia of newborn, (Murphy, Wilson, Bowman), 528, 599
Drugs in obstetrics, (Arey), 893
Dry labor in elderly primiparae, (Quigley), 241
Dyspareunia, psychotherapy in, (Mayer), 362
Dystocia due to complete atresia of cervix uteri, (Bailey), 64 (abst.)
labor, under spinal anesthesia, (Metzger), 759 (abst.)
relation between sterility or lowered fertility and, (Quigley), 240

E

Eclampsia as complication of labor, (Findley), 797
treatment of, (Galloway), 560
Eclamptic or preeclamptic intoxication, (Stieglitz), 31
Ectopic gestation, bleeding in, (Hendry), 214
cases of, in hospitals, (Findley), 799
treatment of, (Hendry), 216
uterus unicornis with rudimentary left uterus and right, (Hart), 131
Edema in pregnancy, (Stieglitz), 36
Editorial comments, 148, 442
Education of midwives, (McCord), 837
Embolism, postoperative, causes of, (Schumacher), 451 (abst.)
treatment of, (Tholen), 511 (abst.)
puerperal, causes of, (Schumacher), 451 (abst.)
treatment of, (Tholen), 511 (abst.)
pulmonary, following hysterectomy operation, (Burch and Burch), 705
Encephalitis hemorrhagica after salvarsan treatment during pregnancy, (Gammeltoft), 153 (abst.)
Endocrines, relation of, to maternal and fetal problems, (Arey), 884
Endometritis, puerperal, following retrograde infection through a venous thrombosis, (Beck), 452 (abst.)
Endometrium of adolescents, examination of, in functional menstrual disturbances, (Plass), 206
Energy requirements of the adult woman, (Arey), 894
Epidemic of septic infection in Maternity Hospital, (Allan and Bryce), 449 (abst.)
Epidermidalization and epidermoidalization of columnar epithelium and glands, (Freedman), 7
Episiotomy, prophylactic, (Rongy), 273
Epithelium, columnar, and glands, metaplasia of, (Freedman), 7
squamous, hyperplasia of the, (Freedman), 10
Excretory function of uterine mucosa, (Sakuma), 289 (abst.)
Exercise, postpartum, (Galloway), 562
Extension courses, 154 (correspondence)

F

Fallopian tube, primary carcinoma of, (Rabinovitch and Horton), 689
Fat, irradiated, use of, in gynecology, (Polzl), 25 (abst.)
Female sex hormone, treatment of irregular uterine hemorrhage by, (Goldstine and Fogelson), 464
hormones, (Arey), 884
Fertility, lowered, and dystocia, relation between, (Quigley), 240
Fetal deaths, abortion as cause of, (Adair), 770
better classification of, (Adair), 768
morbidity and mortality, factors and causes of, (Ehrenfest), 867
mortality in placenta previa, (Peckham), 45
following artificial rupture of membranes, (Guttmacher and Douglas), 493
Fetus, damage to, through repeated exposures to roentgen ray during pregnancy, (Unterberger), 151 (abst.)
Fibroids, calcified pedunculated, case of floating uterus with, (Archer and Greenberg), 335
multiple, of uterus, pregnancy complicated by, (Gill), 137
Fibromyomas of uterus in elderly primiparae, (Quigley), 236
Flagg resuscitation apparatus, 539, 600
Fluid intake to output, relation of, in toxemia of pregnancy, (Schumann), 385
Follicular hormone, (Arey), 885
Follow-up of radium-treated uterine cancer, (Schneider), 344
Forceps extraction, application in, (Harper), 280, 575
high, in elderly primiparae, (Quigley), 239
obstetric, a new, (Zweifel), 138
use of, in general practice and in the home, (Ehrenfest), 875
Frankenhäuser ganglion, anesthesia of, in gynecology, (Arcieri), 756 (abst.)
Frochlich's syndrome, sedimentation rate in, (Mathieu, et al.), 203

G

Galactose tolerance during pregnancy, (Rowe), 655
Galvanic dilatation, chronic menorrhagia cured by, (Pedersen), 122
Gangrene of puerperal uterus, (Weinzierl), 451 (abst.)
puerperal, in septic conditions and gynergen medication, (Saenger), 451 (abst.)
Genital passages, female, bacterial flora of, in pregnancy and puerperium, (Bryce), 616 (abst.)
Gentian violet in treatment of Monilia vulvovaginitis, (Plass, Hesseltine, Borts), 321
Gestation, ectopic, bleeding in, (Hendry), 214
cases of, in hospitals, (Findley), 799
Glands, hyperplasia of, (Freedman), 12
Skene's or Bartholin's, infection of, sedimentation rate in, (Mathieu, et al.), 203
Glucose, intravenous administration of, the continuous, (McConnell), 250
treatment of hyperemesis gravidarum, (Van Wyck), 244
Gonorrhea, as cause of blindness in children, number of, in United States, (Adair), 768
Graduate teaching of obstetrics, (Holmes), 809
Gynaekologische operationslehre, (Paham and Amreich), 607 (book review)
Gynecologic service, psychotherapy in, (Mayer), 357, 430
therapy, intrauterine instillations in, (Mussatow), 334 (abst.)
Gynecological operations, 607 (book review)
Gynecologist, training of, (Cullen), 389 (abst.)
Gynecology, amenorrhea, radiation treatment of, (Kaplan), 52
American Board of, certificate holders, 296
anesthesia in, 756 (abst.)
local, (Heim), 757 (abst.)
asthenia, sedimentation rate in, (Mathieu, et al.), 201
atresia of cervix, complete, dystocia due to, (Bailey), 64 (abst.)
cancer development, age period changes in, (Freedman), 1
of cervix, surgery and radiation in, (Jones, T. E.), 187, 595
uterine, miostagmin reaction in diagnosis of, (Schneider), 340
carcinoma of cervix, etiologic factors, (Smith, F. R.), 18
of fallopian tube, primary, (Rabinovitch and Horton), 689
of vagina, primary, in girl of fourteen, (Baldwin), 728
cervical erosion, sedimentation rate in, (Mathieu, et al.), 203
choriomas, (Schmitz), 256, 593
control of pain, (Halban), 757 (abst.)
cystocele, sedimentation rate in, (Mathieu, et al.), 203
cysts, ovarian, sedimentation rate in, (Mathieu, et al.), 203
embolism, postoperative, causes of, (Schumacher), 451 (abst.)

Gynecology—Cont'd
female sex hormone, treatment of irregular uterine bleeding by, (Goldstine and Fogelson), 464
fibroids, multiple, of uterus, pregnancy complicated by, (Gill), 137
Froehlich's syndrome, sedimentation rate in, (Mathieu, et al.), 203
hemangioma-endothelioma intravasculare of ovary, (Sovak and Carabba), 544, 597
hemorrhage, irregular uterine, treatment of, by female sex hormone, (Goldstine and Fogelson), 464
heterologous tumors of the uterus, (Shapiro), 83
hydrocele, double tuberculous, affections of round ligament and, (Jones, E. M.), 196 (abst.)
hysterectomy, chemical, fatal case of, (Nokes), 744
mortality in, (Burch and Burch), 704
infection of Skene's and Bartholin's glands, sedimentation rate in, (Mathieu, et al.), 203
interposition operations, analysis of, (Meshberg), 398
irradiated fat in, (Polzl), 25 (abst.)
irregular menses, (Fluhmann and Morse), 458
uterine hemorrhage, treatment of, by female sex hormone, (Goldstine and Fogelson), 464
kraurosis vulvae, (Rerrhun), 217 (abst.)
Krukenberg tumors of ovary, (Bennett and Douglass), 91
local anesthesia in, (Heim), 757 (abst.)
malignancy, sedimentation rate of, (Mathieu, et al.), 203
matin sleep in, (Chandler), 285, 589
menorrhagia, (Fluhmann and Morse), 457
chronic, cured by zinc chloride ionization, (Pedersen), 122
menses, irregular, (Fluhmann and Morse), 458
menstrual cramps, tetanoid syndrome and its relation to, (Hartley), 725
disturbances of adolescents, (Plass), 205, 586
menstruation, uterine mucous membrane during, (Bartelmez), 623
miostagmin reaction in diagnosis of uterine cancer, (Schneider), 340
myomas, uterine, sedimentation rate in, (Mathieu, et al.), 202
neurofibromatosis, pregnancy as complication of, (Kushner), 116
Gynecology—Cont'd
new stitching device, (Thompson), 750
operative, (Crossen), 609 (book review)
ovarian cyst complicating pregnancy, (Caverly), 566, 598
sedimentation rate in, (Mathieu, et al.), 203
tumor, an unusual, (Stein, I.), 140
pain, control of, (Halban), 757 (abst.)
prolapse of uterus, sedimentation rate in, (Mathieu, et al.), 203
psychotherapy and, (Mayer), 357, 430
radiation in cancer of cervix, (Jones, T. E.), 187, 595
treatment of amenorrhea, (Kaplan), 52
of sterility, (Kaplan), 52
rectocele, sedimentation rate in, (Mathieu, et al.), 203
retroversion of uterus, sedimentation rate in, (Mathieu, et al.), 203
rhabdomyosarcoma of the corpus uteri, (Shapiro), 83
roentgen diagnosis in, (Stein), 671
salpingitis, sedimentation rate in, (Mathieu, et al.), 201
sarcomas of the uterus, (Shapiro), 83
sedimentation rate in, (Mathieu, et al), 197, 591
sterility and dystocia, relation between, (Quigley), 240
radiation treatment of, (Kaplan), 52
sedimentation rate in, (Mathieu, et al.), 201
sterilization, surgical, (Rongy), 272
suggestive therapy, (Mayer), 360
surgical sterilization, (Rongy), 272
surgery in cancer of cervix, (Jones, T. E.), 187, 595
of pelvic-utero-adnexal sympathetics, (Mayer and Dejardin), 233 (abst.)
sympathectomy in, (Rouffart), 139 (abst.)
teaching of, résumé of questionnaires sent to medical deans, (Findley), 768
tetanoid syndrome and its relation to menstrual cramps, 725
thrombosis, postoperative, causes of, (Schumacher), 451 (abst.)
thymophysin in uterine inertia, (Bauer), 411, 752
torsion of undiseased uterine adnexa in virgins, (Downer and Brines), 665
transuterine tubal insufflation, new cannula for, (Hyams), 746
trichomonas vaginalis vaginitis, sedimentation rate in, (Mathieu, et al.), 203

Gynecology—Cont'd
tubal insufflation, transuterine, new cannula for, (Hyams), 746
patency test, simplified method of introducing the carbon dioxide in, (Hanson), 749
tuberculosis of cervix, (Missett), 431
of female pelvis, (Jameson), 228 (abst.)
tumors of ovary, Krukenberg, (Bennett and Douglass), 91
of uterus, heterologous, (Shapiro), 83
uterine cancer, miostagmin reaction in diagnosis of, (Schneider), 340
hemorrhage, studies on, (Fluhmann and Morse), 455
inertia, thymophysin in, (Bauer), 411, 752
myomas, sedimentation rate in, (Mathieu, et al.), 202
vaginal illumination, simple method of, (Shnayerson), 748
vesicular mole, bleeding in, (Hendry), 216
von Recklinghausen's disease, (Kushner), 116
vulvitis aphthosa, (Flusser), 268 (abst.)
vulvovaginitis, Monilia, (Plass, Hesseltine, Borts), 320

H

Handbuch der inneren sekretion, (Hirsch), 611 (book review)
der Mikroskopischen anatomie des menschen (Möllendorff and Schröder), 612 (book review)
Hemangio-endothelioma intravasculare of ovary, (Sovak and Carabba), 544, 597
Hemiplegia complicating pregnancy, (Perkins), 135
Hemoglobin, intrapartum and postpartum, relation of, to morbidity, (Harvey), 476
Hemorrhage, accidental, (Polak), 218, 420
associated with pregnancy, (Fluhmann and Morse), 455
following hysterectomy operation, (Burch and Burch), 706
in early months of pregnancy, (Hendry), 211, 420
in nonpregnant conditions, (Fluhmann and Morse), 455
into hydatid of Morgagni simulating acute appendicitis, (Heinrich), 120
intraabdominal, from rupture of vein during pregnancy, (Falk), 118
intracranial, of newborn, (Tyson and Crawford), 694
Hemorrhage—Cont'd
irregular uterine, treatment of, by female sex hormone, (Goldstine and Fogelson), 464
late, in postpartum period, (Balard), 453 (abst.)
of pregnancy, symposium on, 420
postabortal, late, (Fraenkel), 454 (abst.)
postoperative, as complication of labor, (Findley), 798
postpartum, cessation of coagulation of blood in, (Skajaa), 364 (abst.)
late, (Fraenkel), 454 (abst.)
treatment of, (Galloway), 558
Hemorrhagic lesions of the placenta, significance of, (Montgomery, T. L.), 169
Hereditary lues, new methods in treatment of, (Arbat), 153 (abst.)
Heterologous tumors of the uterus, (Shapiro), 83
High forceps application, (Harper), 282
Histology, textbook of, (Jordan), 610 (book review)
Hormone, anterior pituitary, action of, (Kraul), 301
female sex, (Arey), 884
treatment of irregular uterine hemorrhage by, (Goldstine and Fogelson), 464
follicular, (Arey), 885
Hospital schools of nursing, state regulations governing the, (Kosmak), 831
Hospitalization of parturient women, (Ehrenfest), 877
Hospitals, résumé of questionnaires sent to, in relation to obstetric teaching, (Findley), 794
rural, establishment of, (Adair), 774
Human milk, qualities of, (Arey,) 898
Hydrocele, double tuberculous, affections of the round ligament with a report of a case of, (Jones, E. M.), 196 (abst.)
Hyoscine amnesia in labor, (Jennings), 761 (abst.)
Hyperemesis as complication of labor, (Findley), 797
gravidarum, treatment of, (Van Wyck), 243, 581
Hyperplasia of glands, (Freedman), 12
of the squamous epithelium, (Freedman), 10
Hypothyroidism and pregnancy, (Ehrenfest), 871
Hysterectomy, abdominal, and venous ligation in puerperal infection, (Ferrari and Houel), 664 (abst.)
chemical, fatal case of, (Nokes), 744
zinc chloride poisoning following, (Burch and Burch), 707
mortality in, (Burch and Burch), 704

I

Infant, blindness of, prevention in, by adequate prenatal and postnatal care, (Adair), 768
care, early, (Polak), 852
deaths, early, better classification of, (Adair), 768
mortality in elderly primiparae, (Quigley), 241
proper nutrition of, (Adair), 769
Infarction of the placenta, etiology and significance of, (Montgomery, T. L.), 157, 579
Infection, postpartum, treatment of, (Galloway), 559
Innominate artery, aneurysm of, case of floating uterus with calcified pedunculated fibroids presenting, (Archer and Greenberg), 335
Intercourse, sexual, frequency of, as cause of cancer of cervix, (Smith, F. R.), 25
Monilia vulvovaginitis following, (Plass, Hesseltine, Borts), 321
Internal pudendal nerve, anesthesia of, in gynecology, (Arcieri), 756 (abst.)
Interposition operations, analysis of 128, (Meshberg), 398
Intestinal bacteria, (Arey), 887
Intraabdominal hemorrhage from rupture of uterine vein during pregnancy, (Falk), 118
Intracranial hemorrhage of newborn, (Tyson and Crawford), 694
injury, (Ehrenfest), 874
Intradermal reaction to streptococcic filtrate in puerperal infection, value of, (Laffont and Fulconis), 618 (abst.)
Intrauterine instillations in gynecologic therapy, (Mussatow), 334 (abst.)
Irradiated fat, use of, in gynecology, (Polzl), 25 (abst.)
Irradiation, ultraviolet, of mother, influence of, on constitution of the newborn (Freund and Schmitt), 151 (abst.)
Item, 154, 296, 764

J

Johns Hopkins Hospital, statistical study of placenta previa at the, (Peckham), 39

K

Kidney in toxemia of pregnancy, (Schumann), 385
Kjelland forceps, cephalic application, (Harper), 282
Kraurosis vulvae, (Rerrhun), 217 (abst.)
Krukenberg tumors of the ovary, (Bennett and Douglass), 91

L

Labor, complications of, cases of, in hospitals, (Findley), 797
coordination of uterus in, (Rudolph and Ivy), 65, 141
dry, as cause of cancer of cervix, (Smith, F. R.), 23
in elderly primiparae, (Quigley), 241
dystocia, under spinal anesthesia, (Metzger), 759 (abst.)
effects of separation of symphysis pubis on, (Ekas), 682
hyoscine amnesia in, (Jennings), 761 (abst.)
in elderly primiparae, (Quigley), 234, 575
induction of, by artificial rupture of membranes, (Guttmacher and Douglas), 485
in elderly primiparae, (Quigley), 236
length of, (Calkins, et al.), 178
after artificial rupture of membranes, (Guttmacher and Douglas), 489
in elderly primiparae, (Quigley), 237
mechanism of, from the neurologist's point of view, (Crothers), 526, 600
oral administration of sodium amytal in, (Hamblen and Hamblin), 715
iso-amylethyl barbiturate in, (Hamblen and Hamblin), 715
painless, by local anesthesia, (Oku), 758 (abst.)
premature, in elderly primiparae, (Quigley), 236
rapid, under spinal anesthesia, (Gautret), 758 (abst.)
sedatives in, (Fairbairn), 761 (abst.)
sodium amytal in, (Hamblen and Hamblin), 715
iso-amylethyl barbiturate in, (Hamblen and Hamblin), 715
technic of rupturing membranes, (Guttmacher and Douglas), 486
third stage of, management of, with special reference to blood loss, (Calkins, et al.), 175, 420
twilight sleep in, (Fairbairn), 761 (abst.)
Laboratory diagnosis of early pregnancy, a simple, rapid procedure for, (Friedman and Lapham), 405
Lacerations in elderly primiparae, (Quigley), 240
Lactation, caloric intake during, (Arey), 894

Laity, education of, in maternity and infancy work, (Adair), 777
Les tumeus solides de l'ovaire, (de Mora), 608 (book review)
Leucemia and pregnancy, (Ehrenfest), 872
Lipiodol in pelvic diagnosis, (Stein), 671
Lues, hereditary, new methods in treatment of, (Arbat), 153 (abst.)
Luminal, administration of, (Chandler), 285, 589
Lysol douche as cause of cancer of cervix, (Smith, F. R.), 22

M

Malaria as cause of abortion, (Ehrenfest), 873
Malignancy of ovary or uterus, sedimentation rate in, (Mathieu, et al.), 203
Malpositions in elderly primiparae, (Quigley), 237
Malpresentations in elderly primiparae, (Quigley), 237
Maternal and early infant care, (Polak), 852
Maternal and fetal problems, basic sciences and their relation to, (Arey), 880
deaths, better classification of (Adair), 768
in Maryland, a survey of, (Knox), 143
death rate, hospital, (Adair), 768
study of, (Gibberd), 416
diet, effect of, on pregnancy and the fetus, (Arey), 896
morbidity and mortality, factors and causes of, (Ehrenfest), 867
mortality, causes of, in United States, (Polak), 858
following artificial rupture of membranes, (Guttmacher and Douglas), 493
from puerperal sepsis, (Young), 445 (abst.)
mortality in midwives' practice (McCord), 841
in placenta previa, (Peckham), 40
in United States, comparison of, with other countries, (Findley), 783
rate, high, national inquiry into the causes of, (Eden), 446 (abst.)
teaching of obstetrics and, (Findley), 390
trend of, in United States and foreign countries, (McCord), 842
welfare, department of, 143
report of committee of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, 290, 417
Maternity care, the trained attendant in, (Kosmak), 835
Matin sleep, (Chandler), 285, 589
Medicine, graduates of, résumé of questionnaires sent to, (Findley), 787
Membranes, artificial rupture of, induction of labor by, (Guttmacher and Douglas), 485
rupturing, treatment of placenta previa by, (Nelms), 551
technic of rupturing, (Guttmacher and Douglas), 486
Menorrhagia, (Fluhmann and Morse), 457
chronic, cured by galvanic dilatation and zinc chloride ionization, (Pedersen), 122
Menses, irregular, (Fluhmann and Morse), 458
regular cycle, then continuous bleeding, (Fluhmann and Morse), 459
Menstrual cramps, tetanoid syndrome and its relation to, (Hartley), 725
cycle, relation of hemorrhage to the events of the, (Fluhmann and Morse), 455
disturbances of adolescents, observations on the functional, (Plass), 205, 586
involution, (Bartelmez), 631
Menstruation, tissue loss during, (Bartelmez), 629
uterine mucous membrane during, (Bartelmez), 623
Metabolic disturbances in hyperemesis gravidarum, (Van Wyck), 243, 581
rate, basal, in functional menstrual disturbances of adolescents, (Plass), 205, 586
Metabolism, respiratory, during pregnancy, (Rowe), 652
Metaplasia of columnar epithelium and glands, (Freedman), 7
Metastases, localization and frequency of, in puerperal sepsis, (Brügelmann), 450 (abst.)
Metastasis, joint, in puerperal infection, (Burger), 451 (abst.)
Microbic disease, transmission of, from parent to offspring, (Arey), 886
Middle-class patient, care of, (Polak), 863
Midwives and maternal and fetal mortality, (Adair), 771
education of, (McCord), 837
need for, in United States, (McCord), 850
practice, comparison of states in United States, (McCord), 843
in United States and Europe, comparison, (McCord), 843

Midwives, practice—Cont'd
maternal mortality in, (McCord), 841
schools for, (Adair), 772
Milk administered to artificially fed infant, (Arey), 888
human, influence of diet on quality and quantity of secretion of, (Arey), 899
psychic influences on secretion of, (Arey), 899
qualities of, (Arey), 898
Mineral requirement during pregnancy, (Arey), 895
Miostagmin reaction in diagnosis of uterine cancer, (Schneider), 340
Monilia vulvovaginitis, (Plass, Hesseltine, Borts), 320
Mono-amniotic twins with twisted cords, (Williams, T. J.), 129
Morbidity, artificial rupture of membranes, (Guttmacher and Douglas), 492
hemoglobin, cell volume per cent, and red cell count, intrapartum and postpartum, relation of, to, (Harvey), 476
Mortality, fetal, following artificial rupture of membranes, (Guttmacher and Douglas), 493
in hysterectomy operations, (Burch and Burch), 704
maternal, following artificial rupture of membranes, (Guttmacher and Douglas), 493
from puerperal sepsis, (Young), 445
teaching of obstetrics and, (Findley), 390
obstetric, (Frank and Kushner), 708
of toxemia of pregnancy, (Schumann), 383
Mucous membrane, uterine, during menstruation, (Bartelmez), 623
Myomas, uterine, sedimentation rate in, (Mathieu, et al.), 202

N

Nails, increased growth of, during pregnancy, (Halban and Spitzer), 274 (abst.)
Necrosis of the placenta, etiology and significance of, (Montgomery, T. L.), 157, 579
Negroes, maternal and fetal morbidity and mortality of, (Ehrenfest), 879
Neonatal deaths, causes of, in United States, (Polak), 859
in 6,000 consecutive deliveries, (Lyon and Bemis), 373, 429
Nephritis in pregnancy, (Stieglitz), 26
Neurofibromatosis, pregnancy as complication of, (Kushner), 116
Neurologist's point of view, mechanism of labor from, (Crothers), 526, 600
Newborn, aniline poisoning in, (Weinberg), 104
asphyxia of, (Coryllos), 512, 600
of the, (Ehrenfest), 875
Drinker respirator treatment of immediate, (Murphy, Wilson, Bowman), 528, 599
inhalational method of resuscitation from, (Henderson), 542, 600
viewpoint of the obstetrician in, (Kosmak), 600
atelectasis of (Coryllos), 512, 600
constitution of, influence of ultraviolet irradiation of mother on, (Freund and Schmitt), 151 (abst.)
infants of syphilitic mothers, treatment of, (Klaften), 153 (abst.)
intracranial hemorrhage of, (Tyson and Crawford), 694
morbidity and mortality of, factors and causes of, (Ehrenfest), 867
resuscitation of, (Coryllos), 512, 600
symposium on, 599
New York Obstetrical Society, 429, 597, 599
Nosencephalus, case of, with eventration of the abdominal and chest organs, polyhydramnios and other anomalies, (Polayes and Soifer), 109
Novarsenobenzol, intravenous injections of, in puerperal sepsis, (Le Lorier), 620 (abst.)
Nurses, education of, in obstetrics, (Adair), 772
obstetric training of, (Kosmak), 828
visiting, (Galloway), 564
Nursing facilities and follow-up in United States, (Polak), 861
hospital schools of, state regulations governing, (Kosmak), 831
obstetric, postgraduate work in, (Kosmak), 834
Nutrition of infant, proper, (Adair), 769

O

Oblique-cephalic application of forceps, (Harper), 281
Obstetric internships in general hospitals, (Findley), 795
mortality, (Frank and Kushner), 708
nursing, nurse's knowledge of, (Kosmak), 828
postgraduate work in, (Kosmak), 834
Obstetrical analgesia, (Gwathmey), 761 (abst.)
morbidity and end-results, (Welton, et al.), 263, 575

Obstetrical—Cont'd
Society of Philadelphia, 431, 439
report of committee of, on incidence and treatment of the toxemia of late pregnancy, (Schumann), 381, 439
Obstetrician, viewpoint of, in asphyxia neonatorum, (Kosmak), 600
Obstetrics, (Williams), 613 (book review)
abdominal pain in pregnancy, (Lane-Roberts), 295 (abst.)
ablatio placentae, (Polak), 218, 420
as complication of labor, (Findley), 797
abortion as cause of maternal deaths, (Adair), 771
in early months of pregnancy, (Hendry), 211
in elderly primiparae, (Quigley), 236
legalized in Russia, (Adair), 771, (Ehrenfest), 867
sedimentation rate in, (Mathieu, et al.), 200
sepsis, (White), 448 (abst.)
acidosis in pregnancy, (Stieglitz), 35
American board of, certificate holders, 296
and gynecology, American Board of announcement of examinations by, 154
residencies in, in hospitals, (Holmes), 816
uniform department of, (Findley), 786
anemia in pregnancy, (Harvey), 476, (Stieglitz), 35
anesthesia, 756 (abst.)
avertin, (Connell), 760 (abst.)
local, (Heim), 757 (abst.)
pudendal, (Oku), 757 (abst.)
spinal, (Cosgrove), 758 (abst.)
aniline poisoning in newborn, (Weinberg), 104
arterial hypertension in pregnancy, (Stieglitz), 36
asphyxia of newborn, (Coryllos), 512, 600
Drinker respirator treatment of, (Murphy, Wilson, Bowman), 528, 599
inhalational method of resuscitation from, (Henderson), 542, 600
postnatal, (Flagg), 537, 600
atelectasis of newborn, (Coryllos), 512, 600
avertin in childbirth, (Connell), 760 (abst.)
Bercovitz test in pregnancy, (Gordon and Emmer), 723
birth injuries, children crippled from, in United States, (Adair), 768
Obstetrics—Cont'd
Braxton Hicks version in placenta previa, (Bill), 227
treatment of placenta previa by, (Nelms), 552
cervical bag, use of, in placenta previa, (Bill), 227
cesarean section, (Findley), 803, (Phaneuf), 498, 597
cesarean section, (Ehrenfest), 874
cervical, (Findley), 803, (Phaneuf), 498, 597
classic, (Findley), 803
in elderly primiparae, (Quigley), 239
in placenta previa, (Bill), 227
low, spinal anesthesia for, (Tassovatz), 759 (abst.)
treatment of placenta previa by, (Nelms), 553
clinic patient, care of, (Polak), 863
combined pregnancy, (Weintraub), 735
compound pregnancy, (Weintraub), 735
contracted pelvis as complication of labor, (Findley), 798
control of pain in, (Halban), 757, (abst.)
delivery, artificial, increase of, in hospital practice, (Ehrenfest), 874
method of, in elderly primiparae, (Quigley), 238
spontaneous, after artificial rupture of membranes, (Guttmacher and Douglas), 489
drugs in, (Arey), 893
dry labor, in elderly primiparae, (Quigley), 241
eclampsia, as complication of labor, (Findley), 797
eclamptic and preeclamptic intoxication, (Stieglitz), 31
ectopic pregnancy, bleeding in, (Hendry), 214
uterus unicornis with rudimentary left uterus and right, (Hart), 131
edema in pregnancy, (Stieglitz), 36
education of midwives, (Adair), 772; (McCord), 837
of nurses, (Adair), 772
of physicians in, (Adair), 774
of students in, (Adair), 774
embolism, puerperal, causes of, Schumacher), 451 (abst.)
endometritis, puerperal, following retrograde infection through venous thrombosis, (Beck), 452 (abst.)
episiotomy, prophylactic, (Rongy), 273
extension courses in, (Holmes), 811
fetal deaths, better classification of, (Adair), 768

Obstetrics—Cont'd
forceps, a new, (Zweifel), 138
deliveries, (Findley), 802
extraction, (Harper), 280, 575
use of, in general practice and in the home, (Ehrenfest), 875
gangrene of puerperal uterus, (Weinzierl), 451 (abst.)
graduate education of physicians, (Holmes), 809
hemiplegia complicating pregnancy, (Perkins), 135
hemorrhage in early months of pregnancy, (Hendry), 211, 420
high forceps in elderly primiparae, (Quigley), 239
hyoscine amnesia in, (Jennings), 761 (abst.)
hyperemesis, as complication of labor, (Findley), 797
gravidarum, treatment of, (Van Wyck), 243, 581
infant deaths, better classification of, (Adair), 768
intracranial hemorrhage of newborn, (Tyson and Crawford), 694
injury, (Ehrenfest), 874
labor, complications of, cases of, in hospitals, (Findley), 797
coordination of uterus in, (Rudolph and Ivy), 65, 141
dystocia, under spinal anesthesia, (Metzger), 759 (abst.)
in elderly primiparae, (Quigley), 234, 575
induction of, by artificial rupture of membranes, (Guttmacher and Douglas), 485
length of, after artificial rupture of membranes, (Guttmacher and Douglas), 489
mechanism of, from neurologist's point of view, (Crothers), 526, 600
painless, by local anesthesia, (Oku), 758 (abst.)
rapid under spinal anesthesia, (Gautret), 758 (abst.)
sodium amytal in, (Hamblen and Hamblin), 715
iso-amylethyl barbiturate in, (Hamblen and Hamblin), 715
third stage, management of, (Calkins, et al.), 175
lacerations in elderly primiparae, (Quigley), 240
local anesthesia in, (Heim), 757 (abst.)
malpositions in elderly primiparae, (Quigley), 237
maternal death rate, hospital, (Adair), 768
better classification of, (Adair), 768
in Maryland, a survey of, (Knox), 143
Obstetrics, maternal—Cont'd
mortality, causes of, in United States, (Polak), 858
in midwives' practice, (McCord), 841
welfare, department of, 143
middle-class patient, care of, (Polak), 865
mono-amniotic twins with twisted cords, (Williams, T. J.), 129
necrosis of placenta, (Montgomery, T. L.), 157
neonatal deaths, causes of, in United States, (Polak), 859
nephritis in pregnancy, (Stieglitz), 26
nosencephalus, case of, with eventration of the abdominal and chest organs, polyhydramnios and other anomalies, (Polayes and Soifer), 109
operative deliveries, (Findley), 802
pain, control of, (Halban), 757 (abst.)
papyraceous fetuses, twin, in triplet pregnancy, (Beierlein), 97
placenta, ablatio, (Polak), 218, 420
as complication of labor, (Findley), 797
arsenic content of, following arsphenamine therapy, (Eastman), 60
necrosis of, (Montgomery, T. L.), 157
previa, (Bill), 227, 420
as complication of labor, (Findley), 797
statistical study of, at Johns Hopkins Hospital, (Peckham), 39
treatment of, at Brooklyn Hospital, (Nelms), 550, 604
by Braxton Hicks version, (Nelms), 552
by cesarean section, (Nelms), 553
by podalic version, (Nelms), 552
structure of, (Arey), 882
plural births, puerperium after, (Gidalewitsch), 448 (abst.)
podalic version, treatment of placenta previa by, (Nelms), 552
Porro operation in modern, (Rosenfeld), 556
postgraduate teaching, (Holmes), 811
postnatal asphyxia, (Flagg), 537, 600
postoperative hemorrhage as complication of labor, (Findley), 798
postpartum care, (Galloway), 558, 599
prenatal and postnatal care, to eliminate blindness in infants, (Adair), 768
care in United States, (Polak), 855
intensive, 149 (editorial comments)
primiparae, elderly, pregnancy in, (Quigley), 234, 575
pudendal anesthesia in, (Oku), 757 (abst.)

Obstetrics—Cont'd
puerperal fever, infectious, (Robinson and Cuttle), 449 (abst.)
embolism, causes of, (Schumacher), 451 (abst.)
endometritis following retrograde infection through a venous thrombosis, (Beck), 452 (abst.)
gangrene in septic conditions and gynergen medication, (Saenger), 451 (abst.)
infection, joint metastasis in, (Burger), 451 (abst.)
statistics of, (Jeannin and Sureau), 447 (abst.)
prevention of, (Langhorst), 543 (abst.)
sepsis, (Hobbs), 445 (abst.)
(White), 448 (abst.)
maternal mortality from, 445 (abst.)
tetanus, (Chalier and Rousset), 452 (abst.)
thrombosis, causes of, (Schumacher) 451 (abst.)
uterus, gangrene of, (Weinzierl), 451 (abst.)
puerperium, uterine irrigation with alcohol during, (Brock), 574 (abst.)
pyelitis gravidarum, treatment of, (Hofbauer), 279 (abst.)
rachitic naegele type pelvis, with faulty inclination and marked spinal deformity, (Jacobs), 125
renal fatigue in pregnancy, syndrome of, (Stieglitz), 30
resuscitation of newborn, (Coryllos), 512, 600
rupture of membranes, artificial, induction of labor by, (Guttmacher and Douglas), 485
rural patient, care of, (Polak), 863
sedatives in labor, (Fairbairn), 761 (abst.)
sedimentation rate in, (Mathieu, et al.), 197, 591
separation symphysis pubis, traumatic, (Ekas), 680
sepsis as cause of maternal deaths, (Adair), 770
septicemia, deaths from, (Adair), 770
sodium amytal in labor, (Hamblen and Hamblin), 715
iso-amylethyl barbiturate in labor, (Hamblen and Hamblin), 715
spinal anesthesia in, (Cosgrove), 758 (abst.)
stillbirths, causes of, in United States, 859
teaching of, and maternal mortality, (Findley), 390
in United States, (Findley), 785
undergraduate, (Findley), 783
Obstetrics, teaching of—Cont'd
résumé of questionnaires sent to medical deans, (Findley), 786
third stage of labor, management of, (Calkins, et al.), 175
thrombosis of interlobular arteries of kidneys in pregnancy, (Dalrymple), 115 (abst.)
puerperal, causes of, (Schumacher), 451 (abst.)
toxemia, as complication of labor, 797
in elderly primiparae, (Quigley), 235
of late pregnancy, incidence and treatment of, (Schumann), 381, 439
toxemic nephritic group cases, observations on, (Kellogg), 275, 581
training of nurses and attendants, (Kosmak), 828
triplet pregnancy, papyraceous fetuses in, twin, (Beierlein), 97
tubal pregnancy, sedimentation rate in, (Mathieu, et al.), 200
twilight sleep in labor, (Fairbairn), 761 (abst.)
twin pregnancy, with death of one fetus, (Parks), 112
twins, diversity of invasion of treponema in, a case of, (Peig), 152 (abst.)
undergraduate teaching of, (Findley), 783
uterine rupture as complication of labor, (Findley), 798
uterus bicornis unicollis, pregnancy in, with the child occupying one horn and the placental site a portion of both, (Michael), 133
vaginal repair, (Rongy), 269, 580
venoclysis, the continuous intravenous administration of glucose, (McConnell), 250
version, Braxton Hicks, in placenta previa, (Bill), 227
treatment of placenta previa by, (Nelms), 552
cases of, in hospitals, (Findley), 802
in elderly primiparae, (Quigley), 238
podalic, treatment of placenta previa by, (Nelms), 552
vomiting of pregnancy, treatment of, (Van Wyck), 243, 581
well-to-do patient, care of, (Polak), 865
Operative gynecology, (Crossen), 609 (book review)
Organizations for maternity and infancy work, (Adair), 777
Ovarian cyst complicating pregnancy, (Caverly), 566, 598

Ovarian—Cont'd
cysts, sedimentation rate in, (Mathieu, et al.), 203
tumor, an unusual, (Stein, I.), 140
Ovary, hemangio-endothelioma intravascular, of, (Sovak and Carabba), 544, 597
Krukenberg tumors o°, (Bennett and Douglass), 91
malignancy of, sedimentation rate in (Mathieu, et al.), 203
solid tumors of, (de Mora), 608 (book review)
Ovulation bleeding, (Fluhmann and Morse), 460

P

Pain, abdominal, in pregnancy, (Lane-Roberts), 295 (abst.)
control of, in obstetrics and gynecology, (Halban), 757 (abst.)
relief of the parturient, (Ehrenfest), 875
viscero-cutaneous, in gynecology and obstetrics, relief of, by local subcutaneous anesthesia, (Parol), 756
Papyraceous fetuses, twin, in triplet pregnancy, (Beierlein), 97
Parasitic diseases as cause of abortion or premature labors, (Ehrenfest), 872
Parturient, hospitalization of, (Ehrenfest), 877
pain, relief of, (Ehrenfest), 875
Parturition, forced and accelerated, in spinal anesthesia, (Pistuddi), 759 (abst.)
placental fragments at, some experiences concerning, (Ryberg), 453 (abst.)
Patency of tubes, new method of determining, in course of abdominal operations, (Newell), 414, 588
Pelves, contracted, in elderly primiparae, (Quigley), 237
Pelvic irradiation in gynecology, effect of, upon child, (Ehrenfest), 873
viscera, visualization of, with lipiodol and pneumoperitoneum, (Stein), 676
Pelvic-utero-adnexal sympathetics, clinical consideration of surgery of, (Mayer and Dejardin), 233 (abst.)
Pelvis, female, tuberculosis of, (Jameson), 226 (abst.)
rachitis naegele type, with faulty inclination and marked spinal deformity, (Jacobs), 125
Peritonitis following hysterectomy operation, (Burch and Burch), 705
generalized abortal, operative treatment of, (Chydenius), 497 (abst.)
Phenyl-ethyl-mal-on-ylurea, (Chandler), 288
Phlebitis, utero-pelvic, suppurative, observations on, (Laffont, et al.), 497 (abst.)
Physical measurements during normal pregnancy, (Rowe), 645
Physicians, education of, in obstetrics, (Adair), 774
graduate education of, in obstetrics, (Holmes), 809
specialization of, (Adair), 775
Physiology, relation of, to fetal and maternal problems, (Arey), 883
Pituitary experiments, tabulation of, (Kraul), 317
extract in treatment of pyelitis of pregnancy, (Hofbauer), 279 (abst.)
Placenta, ablatio, (Polak), 218, 420
arsenic content of the human, following arsphenamine therapy, (Eastman), 60
hemorrhagic lesions of, significance of, (Montgomery, T. L.), 169
human, arsenic content of, following arsphenamine therapy, (Eastman), 60
infarction of, etiology and significance of, (Montgomery), 157, 579
necrosis of, etiology and significance, (Montgomery), 157, 579
previa, (Bill), 227, 420
as complication of labor, (Findley), 797
maternal mortality, (Peckham), 40
statistical study of, at Johns Hopkins Hospital, (Peckham), 39
treatment of, at Brooklyn Hospital, (Nelms), 550, 604
by Braxton Hicks version, (Nelms), 552
by cesarean section, (Nelms), 553
by podalic version, (Nelms), 552
by rupturing membranes, (Nelms), 551
structure of, (Arey), 882
Placental circulation, (Arey), 883
extracts, (Arey), 885
fragments at parturition, some experiences concerning, (Ryberg), 453 (abst.)
implants in immature mice, (Kraul), 312
Pneumoperitoneum in pelvic diagnosis, (Stein), 671
Podalic version, treatment of placenta previa by, (Nelms), 552
Porro operation in modern obstetrics, (Rosenfeld), 556
Postabortal hemorrhage, (Fraenkel), 454 (abst.)
Posterior position, persistent, delivery of, (Harper), 283
Postclimacteric bleeding, (Fluhmann and Morse), 462
Postgraduate teaching in obstetrics, (Holmes), 811
work in obstetric nursing, (Kosmak), 834

Postnatal asphyxia, treatment of, (Flagg), 537, 600
Postoperative embolism, causes of, (Schumacher), 451 (abst.)
thrombosis, causes of, (Schumacher), 451 (abst.)
Postpartum care, (Galloway), 558, 599
hemorrhage, (Fraenkel), 454 (abst.)
treatment of, (Galloway), 558
infection, treatment of, (Galloway), 559
Posture, postpartum, (Galloway), 562
Pregnancy, abdominal pain in, (Lane-Roberts), 295 (abst.)
acidosis in, (Stieglitz), 35
alveolar carbon dioxide during, (Rowe), 655
and anemia, (Ehrenfest), 872
and diabetes, (Ehrenfest), 871
and hyperthyroidism, (Ehrenfest), 871
and labor in elderly primipara, (Quigley), 234, 575
and leucemia, (Ehrenfest), 872
and sexual intercourse, (Ballin), 617 (abst.)
anemia in, (Harvey), 476; (Stieglitz), 35
arterial hypertension in, (Stieglitz), 36
as complication of neurofibromatosis, (Kushner), 116
Bercovitz test in, (Gordon and Emmer), 723
bactericidal power of blood during, (Miller and Whitaker), 617 (abst.)
bacterial flora of female genital passages in, (Bryce), 616 (abst.)
blood chemistry during, (Rowe), 650
findings at termination of, (Harvey), 476
morphology during, (Rowe), 652
cancer as complication of, (Ehrenfest), 870
carbohydrate deficiency in, (Van Wyck), 244
cardiac failure during, (Ehrenfest), 870
combined, (Weintraub), 735
complicated by multiple fibroids of uterus, (Gill), 137
compound, (Weintraub), 735
delivery of diabetic patient, (Ehrenfest), 872
diabetic patient, delivery of, (Ehrenfest), 872
Dick test in, (Salmond and Turner), 619 (abst.)
diet during, (Arey), 894
duration of, in toxemia, (Schumann), 387
early diagnosis of, simple, rapid procedure for the laboratory, (Friedman and Lapham), 405
edema in, (Stieglitz), 36
energy production in, (Arey), 894
galactose tolerance during, (Rowe), 655
Pregnancy—Cont'd
hemiplegia complicating, (Perkins), 135
hemorrhage in early months of, (Hendry), 211, 420
hemorrhages of, symposium on, 420
in elderly primiparae, (Quigley), 234, 575
in uterus bicornis unicollis with the child occupying one horn and the placental site a portion of both, (Michael), 133
mineral requirement during, (Arey), 895
Monilia vulvovaginitis and, (Plass, Hesseltine, and Borts), 321
nephritis in, (Stieglitz), 26
normal, some functional criteria of, (Rowe), 644
ovarian cyst complicating, (Caverly), 566, 598
physical measurements during normal, (Rowe), 644
premature expulsion of uterine contents, (Ehrenfest), 871
termination of, (Adair), 770
prevention of, advice concerning, (Ehrenfest), 878
protein requirement of woman during, (Arey), 895
pyelitis of, treatment, (Hofbauer), 279 (abst.)
renal diseases during, (Ehrenfest), 870
fatigue in, syndrome of, (Stieglitz), 30
repeated exposures to roentgen ray during, damage to fetus through, (Unterberger), 151 (abst.)
respiratory metabolism during, (Rowe), 652
rupture of a uterine vein during, intraabdominal hemorrhage from, (Falk), 118
salvarsan treatment during, encephalitis hemorrhagica after, (Gammeltoft), 153 (abst.)
sedimentation rate in, (Mathieu, et al.), 199
separation of symphysis pubis, traumatic, during, (Ekas), 680
splenectomy during, (Ehrenfest), 872
test of Aschheim and Zondek in differential diagnosis of amenorrheic and climacteric disturbances, (Solms and Klopstock), 372 (abst.)
thrombosis of interlobular arteries of kidneys in, (Dalrymple), 115 (abst.)
toxemia of, and necrosis of the placenta, relationship between, (Montgomery), 172
of late, incidence and treatment of, (Schumann), 381, 439
trichomonas vaginalis vaginitis in, (Bland, Goldstein, and Wenrich), 365, 438

Pregnancy—Cont'd
triplet, twin papyraceous fetuses in, (Beierlein), 97
tubal, sedimentation rate in, (Mathieu, et al.), 200
tuberculosis as complication of, (Ehrenfest), 869
twin, with early death of one fetus, (Parks), 112
urine examinations during, (Rowe), 648
vital capacity during, (Rowe), 654
vomiting of, treatment of, (Van Wyck), 243, 581
weight relations during normal, (Rowe), 646
Premature labors in elderly primiparae, (Quigley), 236
Prenatal and postnatal care, adequate, to eliminate blindness in infants, (Adair), 768
care in United States, (Polak), 855
intensive, 149 (editorial comments)
clinics, dental hygiene in, (Polak), 860
Primiparae, elderly, pregnancy and labor in, (Quigley), 234, 575
Professorships, immediate, training for, (Holmes), 820
Progenity, radiotherapy and, (Doederlein), 152 (abst.); (Fischer), 152 (abst.)
Prolapse of uterus, sedimentation rate in, (Mathieu, et al.), 203
Protein requirement of pregnant woman, (Arey), 895
Pseudopregnancy, tissue loss following, (Bartelmez), 642
Psychic influences on secretion of milk, (Arey), 899
Psychotherapy in gynecologic service, (Mayer), 357, 430
Pudendal anesthesia in obstetrics, (Oku), 757 (abst.)
Puerperal embolism, causes of, (Schumacher), 451 (abst.)
endometritis following retrograde infection through a venous thrombosis, (Beck), 452 (abst.)
fever, coitus infection as cause of, (Bar), 617 (abst.)
infectious, (Robinson and Cuttle), 449 (abst.)
Warnekros serum in, (Wozak), 555 (abst.)
gangrene, in septic conditions and gynergen medication, (Saenger), 451 (abst.)
infection, abdominal hysterectomy in, (Ferrari and Houel), 664 (abst.)
bactericidal power of blood, and its relationship to development and course of, (Miller and Whitaker), 617 (abst.)
cases of, in hospitals, (Findley), 799
Dick test in relation to incidence of, (Stent), 619 (abst.)
Puerperal infection—Cont'd
joint metastasis in, (Burger), 451 (abst.)
modern treatment of, (Anderodias), 621 (abst.)
prevention of, (Langhorst), 543 (abst.)
statistics of, (Jeannin and Sureau), 447 (abst.)
streptococcic filtrate in, value of intradermal reaction to, (Laffont and Fulconis), 618 (abst.)
sulpharsenol in preventive treatment of, (Delmas and Brémond), 620 (abst.)
treatment of, with intravenous injections of aseptic pus, (Devraigne, Sauphar and Mayer), 657 (abst.)
morbidity, (Ehrenfest), 876
rate, in patients delivered normally, (Claye), 448 (abst.)
scarlet fever, (Devraigne, Baize and Mayer), 450 (abst.)
sepsis, (Hobbs), 445 (abst.); (White), 448 (abst.)
and sensitiveness to streptococcal toxins, (White), 619 (abst.)
Bezredka's antivirus in, (Bubichenko), 620 (abst.)
blood platelets in prognosis of, (Teoumine), 618 (abst.)
localization and frequency of metastases, (Brügelmann), 450 (abst.)
maternal mortality from, (Young), 445 (abst.)
novarsenobenzol, intravenous injections of, in, (Le Lorier), 620 (abst.)
venous ligation in, (Ferrari and Houel), 664 (abst.)
tetanus, (Chalier and Rousset), 452 (abst.)
thrombosis, cause of, (Schumacher), 451 (abst.)
uterine inversion, acute, (Hamblock), 434
uterus, gangrene of, (Weinzierl), 451 (abst.)
Puerperium after plural births, (Gidalewitsch), 448 (abst.)
bacterial contents vagina and uterus on fifth day of normal, (Harris and Brown), 497 (abst.)
flora of female genital passages in, (Bryce), 616 (abst.)
bactericidal power of blood during, (Miller and Whitaker), 617 (abst.)
death in, causes of, (Peterson), 447 (abst.)
management of, (Longridge), 610 (book review)
pathologic, 445, 616 (selected abstracts)
uterine irrigation with alcohol during, (Brock), 574

Pulmonary embolism following hysterectomy operation, (Burch and Burch), 705
Pyelitis gravidarum, treatment of, (Hofbauer), 279 (abst.)
Pyosalpinx, spontaneous evacuation of, through the uterus, (Garvin), 741

R

Radiation and surgery in treatment of cancer of cervix, comparison of results of, (Jones, T. E.), 187, 595
therapy and the basic sciences, (Arey), 894
treatment of amenorrhea and sterility, (Kaplan), 52
of cancer of cervix, analysis of 200 cases, (Jones, T. E.), 187, 595
Radiotherapy and progenity, (Doederlein), 152 (abst.); (Fischer), 152 (abst.)
Radium therapy in cancer of cervix, rationale and technic of, (Jones, T. E.), 191
treated uterine cancer, follow-up of, (Schneider), 344
Rectocele, sedimentation rate in, (Mathieu, et al.), 203
Red cell count, intrapartum and postpartum, relation of, to morbidity, (Harvey), 476
Renal bacteriology in toxemia of pregnancy, (Schumann), 385
diseases during pregnancy, (Ehrenfest), 870
fatigue in pregnancy, syndrome of, (Stieglitz), 30
function in toxemia of pregnancy, (Schumann), 385
Roentgen diagnosis in gynecology, (Stein), 671
Respirator, Drinker, treatment of immediate asphyxia of newborn, (Murphy, Wilson, Bowman), 528, 599
Respiratory metabolism, during pregnancy, (Rowe), 652
Resuscitation apparatus, (Flagg), 539, 600
inhalational method of, from asphyxia of newborn, (Henderson), 542, 600
of the newborn, (Coryllos), 512, 600
symposium on, 599
Retroversion of uterus, sedimentation rate in, (Mathieu, et al.), 203
Rhabdomyosarcoma of the corpus uteri, (Shapiro), 83
Rickets, diet in relation to, (Arey), 897
Roentgen ray during pregnancy, repeated exposures to, damage to fetus through, (Unterberger), 151 (abst.)
Roentgenography with lipiodol used alone, (Stein), 672
Round ligament, affections of the, with report of a case of double tuberculous hydrocele, (Jones, E. M.), 196 (abst.)
Rupture of membranes, artificial, induction of labor by, (Guttmacher and Douglas), 485
Rural patient, care of, (Polak), 863

S

Salpingitis, sedimentation rate in, (Mathieu, et al.), 201
Salvarsan treatment during pregnancy, encephalitis hemorrhagica after, (Gammeltoft), 153 (abst.)
Sarcomas of the uterus, (Shapiro), 83
Scarlet fever, puerperal, (Devraigne, Baize, and Mayer), 450 (abst.)
Sedatives in labor, (Fairbairn), 761 (abst.)
Sedimentation rate in gynecology and obstetrics, (Mathieu, et al.), 197, 591
Selected abstracts:
anesthesia, 756
fetal injuries, 151
miscellaneous, 25, 64, 115, 139, 196 217, 233, 268, 274, 279, 289, 334, 356, 364, 372, 389, 416, 497, 511, 543, 555, 574, 657, 664
pathologic puerperium, 445, 616
Sella turcica, size of, in adolescents with functional menstrual disturbances, (Plass), 206
Sepsis, abortion, (White), 448 (abst.)
as cause of maternal deaths, (Adair), 770
puerperal, (Hobbs), 445 (abst.); (White), 448 (abst.)
localization and frequency of metastases, (Brügelmann), 450 (abst.)
maternal mortality from, (Young), 445, (abst.)
Septic infection, epidemic of, in maternity hospital, (Allan and Bryce), 449 (abst.)
pus, treatment of puerperal infection with intravenous injections of, (Devraigne, Sauphar and Mayer) 657 (abst.)
Septicemia, classification of deaths from, (Adair), 770
Serum protein value in hyperemesis gravidarum, (Van Wyck), 245
Sexual intercourse, pregnancy and, (Ballin), 617 (abst.)
Shock bleeding, (Skajaa), 364 (abst.)
following hysterectomy operation, (Burch and Burch), 706
Skene's or Bartholin's glands, infection of, sedimentation rate in, (Mathieu, et al.), 203
Social workers, education of, in maternity and infancy work, (Adair), 776

Society Transactions:
American Association of Obstetricians, Gynecologists and Abdominal Surgeons, 417, 575
Brooklyn Gynecological Society, 604
Chicago Gynecological Society, 140, 752
New York Obstetrical Society, 429, 597, 599
Obstetrical Society of Philadelphia, 431, 439
Sodium amytal, oral administration of, in labor, (Hamblen and Hamblin), 715
iso-amylethyl barbiturate, oral administration of, in labor, (Hamblen and Hamblin), 715
Specialists, certification of, 148 (Editorial Comments)
training of, (Holmes), 819
Specimens, obstetric and gynecologic, catalogue of Lockyer collection 609 (book review)
Spinal anesthesia, action of, on perineum of parturient women, (Audebert and Estienny), 759 (abst.)
artificial dilatation under, (Faugère), 758 (abst.)
dystocia labor under, (Metzger), 759 (abst.)
for low cesarean section, (Tassovatz), 759 (abst.)
in obstetrics, (Cosgrove), 758 (abst.)
rapid labor under, (Gautret), 758 (abst.)
Splenectomy during pregnancy, (Ehrenfest), 872
Staphylococcic and gonorrheal infections of female generative organs, (Pfalz), 620 (abst.)
Sterility and lowered fertility and dystocia, relation between, (Quigley), 240
radiation treatment of, (Kaplan), 52
sedimentation rate in, (Mathieu, et al.), 201
Sterilization, permanent, (Ehrenfest), 878
surgical, (Rongy), 272
Stillbirths, causes of, in United States, (Polak), 859
Stitching device, a new, (Thompson), 750
Student, education of, in obstetrics, (Adair), 774
Sulpharsenol, preventive treatment of puerperal infection with, (Delmas and Brémond), 620 (abst.)
Suppurative utero-pelvic phlebitis, observations on, (Laffont, Houel, and Ferrari), 497 (abst.)
Surgical sterilization, (Rongy), 272, 580
Surgery and radiation in treatment of cancer of cervix, comparison of results of, (Jones, T. E.), 187, 595
of the pelvic-utero-adnexal sympathetics, clinical considerations of, (Mayer and Dejardin), 233 (abst.)
Sympathectomy in gynecology, (Roufart), 139 (abst.)
Symphysis pubis, separation of, traumatic, (Ekas), 680
Symposium on hemorrhages of pregnancy, 420
on resuscitation of newborn, 599
Syphilis among pregnant women in United States, (Ehrenfest), 869
as cause of blindness in children, number of, in United States, (Adair), 768
in elderly primiparae, (Quigley), 236
Syphilitic mothers, treatment of newborn infants of, (Klaften), 153 (abst.)

T

Teaching of obstetrics and maternal mortality, (Findley), 390
graduate, of physicians, (Holmes), 809
graduate, of obstetrics, (Holmes), 809
obstetric, résumé of questionnaires sent to medical deans, (Findley), 786
Tetanoid syndrome and its relation to menstrual cramps, (Hartley), 725
Tetanus puerperal, (Chalier and Rousset), 452 (abst.)
Thrombosis of interlobular arteries of kidneys in pregnancy, (Dalrymple), 115 (abst.)
postoperative and puerperal, treatment of, (Tholen), 511 (abst.)
causes of, (Schumacher), 451 (abst.)
puerperal, causes of, (Schumacher), 451 (abst.)
venous, puerperal endometritis following a retrograde infection through a, (Beck), 452 (abst.)
Thymophysin in uterine inertia, (Bauer), 411, 752
Tissue loss during menstruation, (Bartelmez), 629
Torsion of undiseased uterine adnexa in virgins, (Downer and Brines), 665
of uterus, experimental, effects of, on the vessels of parametrium and contiguous tissues, (Polak and Mazzola), 658

Toxemia, as complication of labor, (Findley), 797
duration of pregnancy in, (Schumann), 387
in elderly primiparae, (Quigley), 235
of pregnancy and necrosis of the placenta, relationship between, (Montgomery), 172
blood chemistry of, (Schumann), 385
counts in, (Schumann), 386
pressure finding in, (Schumann), 384
sugar in, (Schumann), 386
convulsions in, (Schumann), 383
fluid intake to output in, (Schumann), 385
kidney in, (Schumann), 385
mortality, (Schumann), 383
renal function in, (Schumann), 385
seasonal incidence, (Schumann), 381, 439
treatment, (Schumann), 387
Van den Burgh test in, (Schumann), 386
Toxemic nephritic group cases, observations on, (Kellogg), 275, 581
Toxins, streptococcal, puerperal sepsis and sensitiveness to, (White), 619 (abst.)
Trained attendant in maternity care, (Kosmak), 835
Transuterine tubal insufflation, new cannula for, (Hyams), 746
Treponema, diversity of invasion by the, in a case of twins, (Peig), 152 (abst.)
Trichomonas vaginalis vaginitis in pregnancy, (Bland, Goldstein, Wenrich), 365, 438
sedimentation rate in, (Mathieu, et al.), 203
Tubal insufflation, transuterine, new cannula for, (Hyams), 746
patency test, simplified method of introducing carbon dioxide in, (Hanson), 749
pregnancy, sedimentation rate in, (Mathieu, et al.), 200
Tuberculosis and pregnancy, problem of, (Ehrenfest), 869
in children, transmission of, from mother, (Adair), 768
of cervix, primary, (Missett), 431
of female pelvis, (Jameson), 226 (abst.)
Tubes, patency of, new method for determining, in course of abdominal operations, (Newell), 414, 588
Tumor, ovarian, an unusual, (Stein, I.), 140
Tumors, heterologous, of the uterus, (Shapiro), 83
Krukenberg, of the ovary, (Bennett and Douglass), 91
Tumors—Cont'd
solid, of ovary, (de Mora), 608 (book review)
Twilight sleep in labor, (Fairbairn), 761 (abst.)
Twin papyraceous fetuses in triplet pregnancy, (Beierlein), 97
pregnancies in elderly primiparae, (Quigley), 235
pregnancy, and early death of one fetus, two cases of, (Parks), 112
Twins, diversity of invasion of treponema in a case of, (Peig), 152 (abst.)
mono-amniotic, with twisted cords, (Williams, T. J.), 129

U

Ultraviolet irradiation of mother, influence of, on constitution of the newborn, (Freund and Schmitt), 151 (abst.)
Urine examinations during normal pregnancy, (Rowe), 648
of pregnant women, (Arey), 886
effect of, on immature mice, (Kraul), 312
Urobilinuria in hyperemesis gravidarum, (Van Wyck), 247
Uterine adnexa, torsion of undiseased, in virgins, (Downer and Brines), 665
cancer, miostagmin reaction in diagnosis of, (Schneider), 340
radium treated, follow-up of, (Schneider), 344
cavity, absence of pathologic organisms in, (Isbruch), 356 (abst.)
contents, premature expulsion of, (Ehrenfest), 871
hemorrhage, irregular, treatment of, by female sex hormone, (Goldstine and Fogelson), 464
studies on, (Fluhmann and Morse), 455
inertia, thymophysin in, (Bauer), 411, 752
inversion, acute puerperal, (Hamblock), 434
irrigation with alcohol during puerperium, (Brock), 574 (abst.)
mucosa, excretory function of, (Sakuma), 289 (abst.)
mucous membrane, human, during menstruation, (Bartelmez), 623
myomas, sedimentation rate in, (Mathieu, et al.), 202
rupture, as complication of labor, (Findley), 798
Uterus, bacterial contents of, fifth day of normal puerperium, (Harris and Brown), 497 (abst.)

Uterus—Cont'd
bicornis unicollis, pregnancy in, with the child occupying one horn and the placental site a portion of both, (Michael), 133
carcinoma of, age incidence, (Baldwin), 728
comparative anatomy of, (Rudolph and Ivy), 71
coordination of, in labor, (Rudolph and Ivy), 65, 141
fibromyomas of, in elderly primiparae, (Quigley), 236
floating, case of, with calcified pedunculated fibroids, (Archer and Greenberg), 335
involution of, (Galloway), 562
malignancy of, sedimentation rate of, (Mathieu, et al.), 203
multiple fibroids of the, pregnancy complicated by, (Gill), 137
prolapse of, sedimentation rate in, (Mathieu, et al.), 203
puerperal, gangrene of, (Weinzierl), 451 (abst.)
retroversion of, sedimentation rate in, (Mathieu, et al.), 203
sarcoma of the, (Shapiro), 83
torsion of, experimental, effect of, on vessels of parametrium and contiguous tissues, (Polak and Mazzola), 658
unicornis with rudimentary left uterus and right ectopic pregnancy, (Hart), 131

V

Vagina, bacterial content of, on fifth day of normal puerperium, (Harris and Brown), 497 (abst.)
carcinoma of, age incidence, (Baldwin), 728
primary, in girl of fourteen, (Baldwin), 728
fungus infections of, (Plass, Hesseltine, Borts), 320
physiology and pharmacology of, (Templeton, Stein and Schochet), 754
Vaginal illumination, simple method of, (Shnayerson), 748
repair, (Rongy), 269, 580
Vaginismus, psychotherapy in, (Mayer), 362
Vaginitis in pregnancy, trichomonas vaginalis, (Bland, Goldstein, and Wenrich), 365, 438
trichomonas vaginalis, sedimentation rate in, (Mathieu, et al.), 203
Van den Burgh test in toxemia of pregnancy, (Schumann), 386
Vena cava, ligation of, (Laffont, Houel, and Ferrari), 497 (abst.)
Venoclysis, the continuous intravenous administration of glucose, (McConnell), 250, 581
Venous ligation in puerperal sepsis, (Ferrari and Houel), 664 (abst.)
Version, Braxton Hicks, treatment of placenta previa by (Nelms), 552
cases of, in hospitals, (Findley), 802
in elderly primiparae, (Quigley), 238
podalic, treatment of placenta previa by, (Nelms), 552
Vesicular mole, bleeding in, (Hendry), 216
Virgins, torsion of undiseased uterine adnexa in, (Downer and Brines), 665
Visiting nurse, (Galloway), 564
Vital capacity during pregnancy, (Rowe), 654
Vitamin diets, adequate, for maintenance and growth, (Arey), 895
Vomiting of pregnancy, treatment of, (Van Wyck), 243, 581
Von Recklinghausen's disease, (Kushner), 116
Vulva, carcinoma of, age incidence, (Baldwin), 728
Vulvitis aphthosa, (Flusser), 268 (abst.)
Vulvovaginitis, monilia, (Plass, Hesseltine, Borts), 320

W

Warnekros serum, prophylactic and therapeutic use of, in puerperal fever, (Wozak), 555 (abst.)
Weight of babies of elderly primiparae, (Quigley), 240
Well-to-do patient, care of, (Polak), 865
Westergren technic, modified, results by, (Mathieu, et al.), 197, 591
White House Conference, editorial comment, 442
number, 765
program of committee on prenatal and maternal care, 901

Z

Zinc chloride ionization, chronic menorrhagia cured by (Pedersen), 122
poisoning following chemical hysterectomy, (Burch and Burch), 707
Zondek-Aschheim test, (Kraul), 312

JUN 15 1931

White House Conference Number

Vol. XXI JUNE, 1931 No. 6

AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY

ADVISORY EDITORIAL BOARD

FRED L. ADAIR
CHANNING W. BARRETT
C. L. BONIFIELD
W. W. CHIPMAN
H. S. CROSSEN
THOMAS CULLEN
ARTHUR H. CURTIS
EDWARD P. DAVIS
JAMES E. DAVIS
J. S. DeLEE
ROBERT L. DICKINSON
PALMER FINDLEY
ROBERT T. FRANK
GEORGE GELLHORN
WILLIAM P. GRAVES
HERMAN E. HAYD
BARTON C. HIRST
E. V. ILL
FLOYD E. KEENE
J. C. LITZENBERG
F. W. LYNCH
FRANKLIN H. MARTIN
C. JEFF MILLER
HENRY P. NEWMAN
GEO. H. NOBLE
REUBEN PETERSON
JOHN OSBORN POLAK
JOHN A. SAMPSON
F. F. SIMPSON
HENRY SCHWARZ
HOWARD C. TAYLOR
GEORGE GRAY WARD
B. P. WATSON
J. WHITRIDGE WILLIAMS

Official Organ of
THE AMERICAN GYNECOLOGICAL SOCIETY
THE AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS AND ABDOMINAL SURGEONS
NEW YORK OBSTETRICAL SOCIETY; OBSTETRICAL SOCIETY OF PHILADELPHIA;
BROOKLYN GYNECOLOGICAL SOCIETY; ST. LOUIS GYNECOLOGICAL SOCIETY;
NEW ORLEANS GYNECOLOGICAL AND OBSTETRICAL SOCIETY
BALTIMORE OBSTETRICAL AND GYNECOLOGICAL SOCIETY
CHICAGO GYNECOLOGICAL SOCIETY
CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS
OBSTETRICAL SOCIETY OF BOSTON

Editor . . . . . GEORGE W. KOSMAK
Associate Editor . . HUGO EHRENFEST

Entered at the Post Office at St. Louis, Mo., as Second Class Matter.
PUBLISHED BY THE C. V. MOSBY COMPANY, 3523-25 PINE BLVD., ST. LOUIS, U. S. A.

The liberal use of cow's milk in the child's diet is desirable for its calcium and phosphorus content when its well-known deficiencies in iron and vitamin B (F) are made good with Mead's Cereal which contains 100 times as much food iron as whole milk.

Samples and literature available to physicians MEAD JOHNSON & CO., Evansville, Ind.

(Mead's Cereal also contains calcium, phosphorus, and copper in addition to vitamins A, B, E and G)

Each form of DIGIFOLINE, "CIBA" is of the same potency, uniformity, and efficacy.

DIGIFOLINE, "CIBA" is of the highest purity and is so standardized that the method of medication may be quickly and easily changed.

You may confidently choose each or all forms of DIGIFOLINE, "CIBA", doctor, with the knowledge that it is a **dependable** digitalis product.

Here It Is, Doctor—

DIGIFOLINE, "CIBA"

in all its forms of issue

LIQUID · · AMPULES · · TABLETS

Write for descriptive literature and samples

CIBA COMPANY, Inc.
NEW YORK CITY

DIGIFOLINE "CIBA"

A "Council-Accepted" Product

Digitalis—100% of it—

For all types of administration—oral, intravenous, intramuscular, subcutaneous, and rectal.

Contains all the therapeutically desirable constituents of digitalis leaves—

Promptly and uniformly absorbed from the gastro-intestinal tract—

Free from irritant substances of the saponin group—

Regularity in Baby's Feedings an Important Gerber Contribution

THE ease with which the Gerber Strained Vegetable Products permit accurate lay observance of strict dietary regime is a contribution of importance to the physician—particularly during summer months. Each Gerber Product is ready-to-serve as it comes from the can. The mother needs only to add a pinch of salt or sugar as you direct—warm slightly—and serve.

Gerber's
STRAINED VEGETABLES

Cooked with oxygen excluded

The Gerber Products are specially prepared with equipment developed in the Gerber Laboratories. Through the use of this equipment—oxygen is excluded from contact with the products during the cooking operation. Other special equipment also excludes contact with oxygen while the Gerber Products are being strained through Monel Metal Screens.

This exclusion of oxygen eliminates the vitamin losses that occur through oxidation when vegetables are cooked under ordinary conditions. Mineral salts, too, are conserved in the maximum degree with the Gerber Process of cooking without the addition of cooking water. After the completion of the cooking process each Gerber Product is sealed, and steam-sterilized.

Unseasoned, specially prepared

Mothers should be reminded that the Gerber Products are specially prepared for baby. No salt, sugar, or seasoning of any kind is added during the Gerber Cooking Process.

The mother should add a pinch of salt or sugar, or serve unseasoned, as you wish for each individual case. A word of caution on this point will avoid the mother's confusion of the Gerber Products with ordinary products which offer conventional flavor to the mother, but which may lack the important technical advantages of the Gerber process of preparation.

Any physician who has any technical question on the Gerber Products or their use in infant feeding, or in colitic, diabetic, or other special diets, is urged to write our Education and Nutrition Department, Lillian B. Storms, (Ph. D.), Director.

May we send you a Gerber Baby—or samples?

GERBER PRODUCTS DIVISION, Fremont Canning Company, Fremont, Michigan

---

GERBER PRODUCTS DIVISION, Fremont Canning Co., Fremont, Mich. Dept. O-15

Without obligation, you may send me the items checked below.

☐ Picture of the Gerber Baby ☐ Strained Vegetable Soup ☐ Strained Green Beans
☐ Strained Prunes ☐ Strained Carrots ☐ Strained Spinach
☐ Strained Peas ☐ Strained Tomatoes

*Name*_____

*Address*_____

Safe as counting sheep . . . but less wearing and more scientific . . ! !

Restful
recuperative sleep
without narcosis
or after-effects
is afforded the patient
for whom you prescribe
the Roche
liquid hypnotic . . . .

ELIXIR ALURATE 'Roche'

Allyl-isopropyl-barbiturate, the only active principle in Alurate, is known to be far more prompt in action and more rapid in elimination than any other hypnotic of that series. The obvious minimization of toxicity gives sleep of finer quality and more normal duration. . . . . .

A trial supply will be sent to physicians on request

HOFFMANN-LA ROCHE, INC.
Nutley New Jersey

Comparative Anti-Ricketic Potency

(*Mead's Viosterol in Oil 250 D vs. Various Foodstuffs*)

Unlike vitamin A which occurs widely in a large number of natural foodstuffs, vitamin D is comparatively deficient in common foodstuffs. The D values here given for the first seven substances are based upon bioassays conducted in the Mead Johnson Research Laboratory. D values for breast milk and butter fat are computed from authoritative reports in the literature. It is a matter of laboratory observation that whole wheat or/and fresh peas are used in the rickets-*producing* rations in animals.

	POTENCY*
Mead's Viosterol in Oil 250 D.	250 D
Mead's 10 D Cod Liver Oil	10 D
Mead's Standardized Cod Liver Oil	3 D
Sardines	0.25 D
Herring	0.25 D
Egg Yolk	0.18 D†
Salmon	0.07 D
Butter Fat	0.0375 D
Breast Milk	0.00375 D
Whole Wheat	none
Fresh Peas	none

*Expressed in Steenbock units, 1 D being that amount of vitamin D which will produce a narrow and continuous line of calcium deposits in the metaphyses of the distal ends of the radii and ulnae of standard ricketic rats when fed under conditions described by Steenbock. † The egg yolks used for this assay were from hens which had received 2% cod liver oil in their ration.

In other words,—

10 drops of Mead's Viosterol in Oil 250 D - or
1½ teaspoonfuls of Mead's 10 D Cod Liver Oil - or
3 teaspoonfuls of Mead's Standardized Cod Liver Oil or
12 egg yolks - - - - - or
15 ounces butter fat - - - - or
300 ounces breast milk - - - - - - - -

} **prevents human rickets**

—Any of these substances, in the amounts indicated, prevents rickets in babies. It is mostly a matter of digestive tolerance. For example, doses of a pound of butter fat or 9 quarts of breast milk per day are obviously too tremendous for practical application. From this point of view, Mead's Viosterol continues to be the choice of many physicians because of small dosage, especially during the warm weather, when low fat intake is desirable. Next in order, perhaps because of its large and economic vitamin A content, many physicians prefer Mead's 10 D Cod Liver Oil with Viosterol.

MEAD JOHNSON & CO. PIONEERS IN VITAMIN RESEARCH Evansville, Ind., U.S.A.

A STEP FORWARD

We now issue three policies to one person thus providing $75.00 weekly for either accident or sickness and $15,000.00 for death due to accidental injuries.

Pays full rate for first week of disability and up to fifty-two weeks.

29 years of altruistic service to Physicians, Surgeons, and Dentists exclusively.

Over

$4,500,000.00
PAID FOR CLAIMS

Assets exceed

$1,000,000.00

Membership fee $3.00 for each policy, also covers June quarterly call and carries insurance to September 10, 1931

PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION

OMAHA — E. E. Elliott, Secy-Treas. — NEBRASKA

Dextri-Maltose for Modifying Lactic Acid Milk

In using lactic acid milk for feeding infants, physicians find Dextri-Maltose the carbohydrate of choice: To begin with, Dextri-Maltose is a bacteriologically clean product, unattractive to flies, dirt, etc. It is dry, and easy to measure accurately. Moreover, Dextri-Maltose is prepared primarily for infant-feeding purposes by a natural diastatic action. Finally, Dextri-Maltose is never advertised to the public but only to the physician, prescribed by him according to the individual requirements of the individual baby.

"DEXTRI-MALTOSE WITH VITAMIN B" IS NOW AVAILABLE FOR ITS APPETITE AND GROWTH STIMULATING PROPERTIES. SAMPLES AND LITERATURE ON REQUEST. MEAD JOHNSON AND COMPANY, EVANSVILLE, INDIANA, U.S.A.